Construction Methods AND EQUIPMENT

A McGRAW-HILL PUBLICATION

OCTOBER, 1961

PRICE $1.00

IN GEORGIA, the contractor had only 90 days in which to form, pour, and erect 4-ton Y-shaped bents (right) and canopy shells (below) at a crowded airport site. **Story on page 89.**

IN MASSACHUSETTS
Fill for Highway Is Hauled 70 Miles...86

IN NEW JERSEY
Contractors Turn Swamp Into $150-Million Dock Facility...92

IN CALIFORNIA
A Slipform Paver Lays 36-Ft Road Slab...98

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TRAVEL WHILE YOU SWING ...AT NO EXTRA FARE

BUILT-IN BONUS SAVES YOU TIME WITH EACH MOVE. Start a P&H and another hoe side by side . . . Have each dig a mile of trench. You can bet on the P&H to come out way ahead.

The big reason is Independent Swing and Propel . . . independent of *all* other functions. It lets the operator move up and adjust his position *while swinging* . . . with no interruption of the work cycle.

He moves as soon as he pushes the propel lever; he is stopped and locked immediately when he returns the lever to neutral. Propel brakes are set and released automatically. Result: simultaneous motions . . . no time lost . . . more cycles per hour.

Other manufacturers, who may offer this feature, may also tell you much the same story. But without this happy ending: the feature is *standard equipment* with a P&H. (Others, by contrast, charge a premium as high as $2500.)

Write us for information, or call your P&H dealer.

HARNISCHFEGER P&H

Milwaukee 46, Wisconsin

Hi-Torque brakes provide positive control as giant Loader lugs 35 tons

The heavy-duty requirements of this CARY-LIFT Loader, made by Pettibone Mulliken Corporation of Chicago, led to a thorough search for the best brakes available. According to the manufacturer: "Exhaustive tests proved to our entire satisfaction that Hi-Torque brakes were far superior to any other type available to us for our requirements."

The brakes on these Loaders provide gentle yet positive braking under all conditions, including operation with very heavy loads in snow, mud, and other adverse conditions. In addition to superior braking power, the manufacturer reports simplified assembly operations through standardization on Hi-Torques.

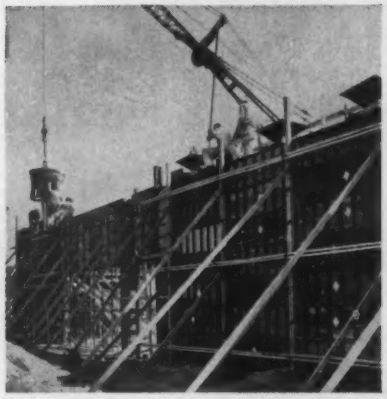
Investigate Hi-Torque brakes for maximum controllability and safety on your heavyweight off-road vehicles. Now available on several makes of Loaders, Trucks, Tractors, Scrapers, Mine Vehicles. For information ask your vehicle manufacturer, or write *B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Dept. CM-10, Troy, Ohio.*

Full circle contact with drum is provided by Hi-Torque brakes giving maximum effective braking surface in the same size unit. Hi-Torque stops vehicles twice as fast as conventional brakes.

B.F.Goodrich **Hi-Torque brakes**

Circle 1 on Reader Service Card

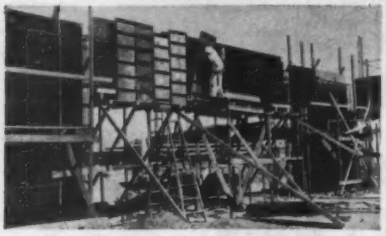
Decorative Walls



Horizontal gang forming with Symons steel-plys saves material and labor

Decorative outside walls, requiring V-scoring at 8-foot intervals, were poured with Symons Steel-Ply Forms by contractor MacIsaac & Menke, Los Angeles. The job—General Telephone of California's new offices in Norwalk.

Like many other contractors, MacIsaac & Menke consulted with The Symons engineering staff to determine if gang forming could be used. Symons recommended gang forming Symons Steel-Ply Forms *horizontally*, and using ½ inch standard V-joints at 8-foot spacings. Using this system the job could be



Workman setting Symons Steel-Ply Forms in place on section of building where gang forming was not required.

(and was) poured in much less time than other common methods.

Because all problems were worked out before starting the job, there was considerable savings in material and labor; and forming, pouring and stripping time was cut substantially.

For the *complete story, write us.* Symons Forms can be purchased outright or rented with purchase option.

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Construction Methods AND EQUIPMENT

OCTOBER, 1961

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VOLUME 43 NUMBER 10

CONSTRUCTION METHODS AND EQUIPMENT, October 1961, Established in 1919. Published monthly by McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948), Founder.

Available only by paid subscription. Subscriptions are solicited only from persons engaged in construction or in supplying the construction industry. Position and company connection must be indicated on subscription orders forwarded to address shown in box below. Publisher reserves the right to refuse non-qualified subscriptions. United States subscription rate for individuals in the field of publication $2 per year, single copies $1; foreign $15 per year, payable in advance. **Editorial, Executive, Circulation, and Advertising offices:** McGraw-Hill Building, 330 W. 42nd St., New York 36, N.Y. Telephone: Longacre 4-3000. Teletype TWX N.Y. 1-1636. Cable Address: McGRAW-HILL, New York. Printed at Garden City, L.I., N.Y., second-class mail postage paid at New York, N.Y., and at additional mailing offices. Title ® registered at U. S. Patent Office.

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SUBSCRIPTIONS: Send subscription correspondence and change of address to Fulfillment Manager, CONSTRUCTION METHODS AND EQUIPMENT, 330 W 42nd St., New York 36, N.Y. Subscribers should notify publisher promptly if any change of address, giving old as well as new address, and including postal zone if any. If possible, enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

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ON THE COVER

With only 90 days in which to precast and erect concrete bents and canopy shells for an over-sized filling station at Atlanta's Municipal Airport Blount Brothers Construction Co. had to set up a fast-moving assembly line. High-strength concrete, polyethylene curing blankets, and a form-stripping compound enabled Blount to erect members just 48 hr after pouring them. In cover photos, a 35-ton Lorain Moto-Crane with 50-ft boom carries different spreader bars to erect first the Y-shaped bents and then the canopy shells. Story on page 89.

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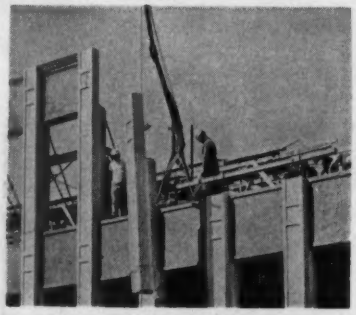
NEXT MONTH

Making the job site passable is the key to a highway job in Minnesota. The 11.7-mi stretch of road crosses a swamp that must be excavated along the right-of-way and replaced with sand fill. To provide solid footing for earthmovers, the contractor first removes the unusable material and places only enough dirt to raise the top of the fill above swamp level. When the entire project is passable, wet fall weather will have less effect on the work and the contractor will complete the cuts and raise the level of the fill to its finished elevation.

Photo Credits:—Cover, Billie Barnes; 63 bottom, Em-Kayan; 92 bottom, 93 right, 94 left, 96, 97 top, Port of New York Authority.

OCTOBER, 1961

Pay Dirt in This Issue



Building Panels Act as Exterior Forms.....100

Erected by a job-built cherry-picker crane, precast Mo Sai column and spandrel panels serve as exterior forms for the concrete walls of an office building in Olympia, Wash.

Fast Spreads Handle Earth, Rock and Gravel....102

Scrapers are workhorses on this busy road project. Besides moving earth, one scraper replaces several big trucks to haul gravel from the crushing plant to the stockpile.

Coated Steel Pipe Is Placed in a Hurry.....108

Many new techniques help a Maryland contractor lay big (108 in. ID), long (40 ft), and heavy (up to 1,500 lb per lin ft) sections of pipe at the rate of 50 ft per hr.

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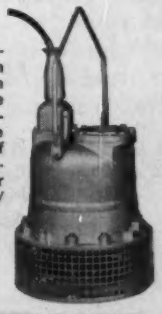
You're in business QUICK with a GORMAN-RUPP SUBMERSIBLE

These All-American designed and built submersible pumps are simplicity itself. Unit has integral motor, lifting bail and power cable, plus a separate control box. No lining up. No levelling. Just hook up power and pipe the pump, drop 'er in the water and you're in business—in minutes!

Gorman-Rupp Submersibles are automatic, electric and unattended. They pump down the supply and can run dry for long periods without damage. Special materials are used at wear points to handle silty water. Maintenance work when needed can be done with regular help, with ordinary tools. Nothing special.

There's no intake or suction line. And you don't spend a cent to *lift* water—every kilowatt of power is used in *pumping* out!

Gorman-Rupp Submersibles will handle more water at less cost and less maintenance than comparable units. Available in seven models from 2" to 8" sizes and from 2 H.P. to 65 H.P. *See your Gorman-Rupp Distributor or write direct.* 3539



At left, an 8" Gorman-Rupp Submersible on the Dillon Dam job in Colorado. At right, note the suction strainer—the 8" pump will handle 1" solids. Weight of pump unit—775 lbs., including 65 H.P. motor (60 cycle, 3 phase, 220/440 volt).

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contain no nitroglycerin • are nonheadache producing • are insensitive to blasting caps • will not detonate from rifle bullet impact • will not propagate from hole to hole • will not drain off in rock fractures • provide high loading densities • possess excellent water resistance

Ask your Hercules representative for details on how Flo-gel and Flo-gel HD can save you money in your blasting operations.

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LUBE LOGIC

Tips for more

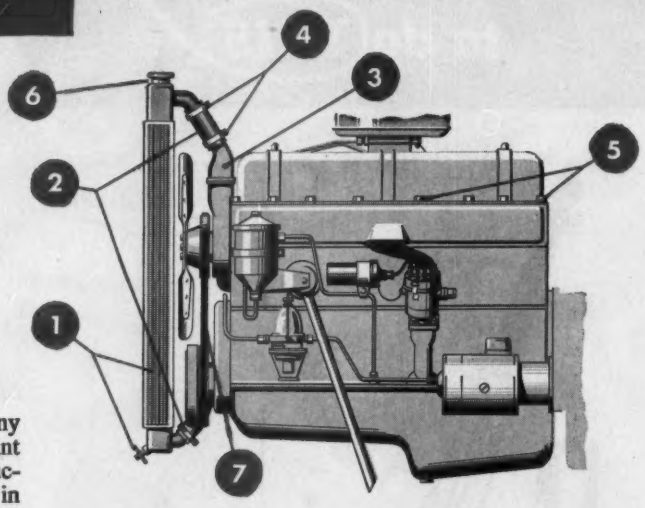
Antifreeze: what's the best type to use; how to make sure you get maximum protection

It's getting pretty close to antifreeze weather in many parts of the country, which brings up two important points: choosing the best type of antifreeze for construction machinery; and making sure the cooling system is in good condition, so the antifreeze can do its job properly.

The right type of antifreeze is the permanent kind. Construction equipment engines operate best at 180°F jacket temperature which is ten degrees higher than the boil-off point for alcohol. Permanent antifreeze (like Texaco Startex) will stay on the job at the temperature that's best for the engine. *Don't* substitute salt or kerosine solutions. They won't freeze, true enough, but they're tough on engine components.

It's important to keep the cooling system in good shape for three reasons: first, because antifreeze that gets into the crankcase causes severe varnish deposits on pistons and rings; second, because you want the antifreeze solution to circulate properly; and third, because antifreeze lost through a leak costs a lot more to replace than just plain water. Before you add antifreeze, check the following points:

1. Clean the cooling system—drain and flush thoroughly.
2. Check the radiator hoses, replace any that are soggy or collapsed.



3. Check the thermostat. If the thermostat is in good condition, the thermostat discharge connection will remain closed until the coolant in the water jacket is up to operating temperature.
4. Tighten connections on hoses that don't need replacing. Antifreeze can pass through spaces too small for water leaks.
5. Tighten cylinder head, oil cooler and other hold-down bolts.
6. Check radiator filler cap gasket.
7. Inspect and adjust fan belt.
8. Now you're ready to put in the antifreeze.

After the antifreeze is in, it's a good idea to:

1. Check the level at operating temperature.
2. Check for leaks.
3. Check water pump packing nut adjustment.
4. Check cooling solution with suitable hydrometer to make sure of protection temperature.

Metal concrete forms can be readied for re-use faster

You can get metal concrete forms cleaned up and back on the job faster if you spray them, before use, with Texaco Stazon. Use the Stazon just as it comes from the container for best results. Field reports say it gives the concrete a fine smooth finish, and the Stazon prevents sticking, shortens clean-up manhours.

Magneto Lubrication: three *IF*s and a *BUT*

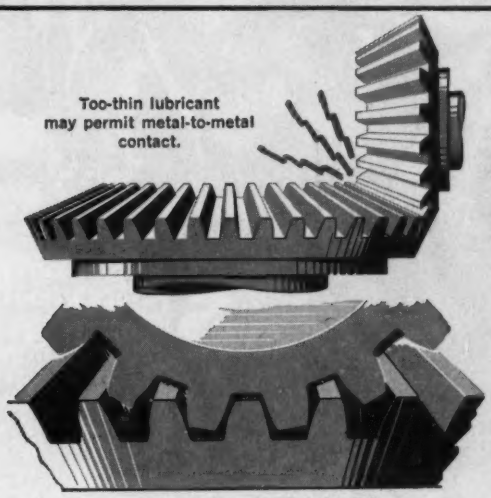
IF the magneto is oil-lubricated, apply a few drops of oil every 500 hours.

IF the magneto is grease lubricated, apply Texaco Marfak Multi Purpose 2 every 100 hours.

IF the magneto is located near the engine exhaust pipe, lubricate with Texaco High Temp Grease every 50 hours.

BUT if the bearings on your magneto are *sealed*, follow manufacturer's recommendations and let the distributor do the servicing.

efficient equipment performance



Too-thick lubricant will hold dirt, pack in gear teeth, may damage bearings.

Key points in choosing gear lubricant for gyratory crushers

One of the toughest lube jobs on a gear-driven gyratory crusher is the gears themselves. They're partly protected by oil-tight cases and dust rings, but some contamination is inevitable, and it's essential that you choose a lubricant that can take it.

Viscosity is very important. These gears are very heavily loaded, so too-low viscosity may not provide a film thick enough to prevent metal to metal contact. On the other hand, if the lubricant is too thick, it will hold grit and dust in suspension, and let it develop a scoring action on the gear teeth. In addition, dust tends to dry out lubricants, and also creates a "packing" condition between gear teeth. This packing of dust and dried lubricant can build up undue pressure on gears and bearings.

Your best bet is a lubricant with a viscosity between 50 and 160 seconds Saybolt Universal at 210°F, with extreme pressure characteristics. These specifications will get you a lubricant with a good compromise between too thick and too thin. Ask any Texaco Lubrication Engineer to help you pick the right grade for your temperature zone.

1. PLAN FOR PROFIT—Texaco's newest color-and-sound movie. Dramatizes the major savings you can make with the proper investment of less than 1% of your total budget—the amount you spend on lubricants. Film features latest lubrication methods and equipment on a number of contracting projects, demonstrating the Texaco Simplified Lubrication Plan in action.

2. FUNDAMENTALS OF LUBRICATION—a brand new Texaco color slide film. A clear, concise once-over that defines technical terms like "viscosity" and explains specifically what lubrication is and what it does. This down-to-earth discussion will give the lubrication man a new understanding of the importance of lubrication, and a fresh interest in his work. It's supplemented with a manual that covers the same ground in greater detail.

3. LUBRICATION OF EARTHMOVING EQUIPMENT—a new slide film, in color. A concise, easy-to-understand analysis of proper lubrication of engines, wheel bearings, steering, track rollers, crawler treads, hydraulic equipment, wire rope, open and enclosed gears. Supplemented with a manual that covers the whole field of earthmoving equipment lubrication in greater detail.

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It is on steady-producing, rock-hard jobs like this, that the ML-309 proves that the right machine was selected. Balanced power, balanced weight and balanced controls provide fast, high-production cycles. Ranges that can't be beat in its size give reach and dump height to handle the big jobs. And exclusive design features give sturdy reliability for long-time, low-cost performance.

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Circle 10 on Reader Service Card

Construction News From Washington

Washington, D.C.
October, 1961

Congress Finally Passes Public Works Bill

The big public works appropriation bill for fiscal year 1962 is one of the largest—and the latest—ever approved by Congress.

The bill provides construction money for 436 projects—both new and continuing—with an eventual cost of more than $17 billion. Most are Corps of Engineers' projects—the Corps has 58 new construction starts. Six new starts for the Bureau of Reclamation also are included.

Total construction funds are $680,893,000 for the Corps and $208,751,500 for the Bureau. Funds for Bonneville Power Administration are $20,875,000, and for Southwestern Power Administration, $950,000.

Largest chunks of money for single projects are: Oahe Reservoir, S.D. (Corps), $40 million; John Day Dam, Ore.—Wash. (Corps), $31 million; Eufala Dam, Okla. (Corps), $28 million; Keystone Dam, Okla. (Corps), $27.5 million; Barkley Dam, Tenn. (Corps), $22 million; Glen Canyon Dam (Bureau), $19.9 million. Other big jobs are $55.1 million for the Bureau's Central Valley Project in California, and $23 million for Corps' work on Mississippi River Channels.

Two small items in the big appropriation bill have the seeds of new federal construction programs: A $150,000 study by the Bureau of Reclamation of possible pumped storage power generating sites near federal reservoirs; and a $300,000 study, also by the Bureau, into the feasibility of building big (345 kv or larger) transmission lines from one region of the U.S. to another.

Pumped storage power was advocated strongly by Southwestern Power Administrator Douglas Wright for his territory around the Ozark Plateau. The Bureau will look at sites throughout the 17 Western states. The Corps of Engineers may get a similar fund next year to study other pumped storage power sites.

Nearly a Billion for Military Work

For military construction Congress agreed on a $950 million appropriation that comes close to the $995 million voted a year ago. Increasing emphasis on defense, however, had raised the sum requested by the Kennedy administration to $1,048 million, $63 million above the Eisenhower estimate of last January.

As finally passed, the bill fell $100 million short of this revised estimate.

The military construction appropriation of $950 million gives nearly $750 million to new U.S. projects that range in size from big

Minuteman ballistic missile complexes to scores of smaller jobs throughout the country for Reserve and National Guard forces. The Air Force gets nearly $500 million, of which over $280 million will go into missile bases. Another $27 million is assigned to the Defense Dept. for allocation to missile and space projects, including facilities for the Army's Nike-Zeus program. Another $1.5 million is earmarked for Kwajalein Island construction.

Army construction gets $154 million and the Navy gets $192 million.

Missile Base Labor Disputes Curbed

The Kennedy Administration's highly successful record in curbing missile site labor troubles appears to have forestalled anti-strike legislation in Congress. The latest figures show only 206 man-days lost to labor disputes out of 1.5 million man-days worked at the Nation's 21 missile sites—"an infinitesimal amount" in the words of Labor Secretary Arthur J. Goldberg.

The record is attributed to the work of the President's missile site labor commission. Sen. John L. McClellan (D.-Ark.), whose Senate Investigations Committee originally exposed the serious threat caused by jurisdictional disputes and other labor stoppages, has praised the commission for "making it possible for our missile and space programs to proceed without any unnecessary obstruction."

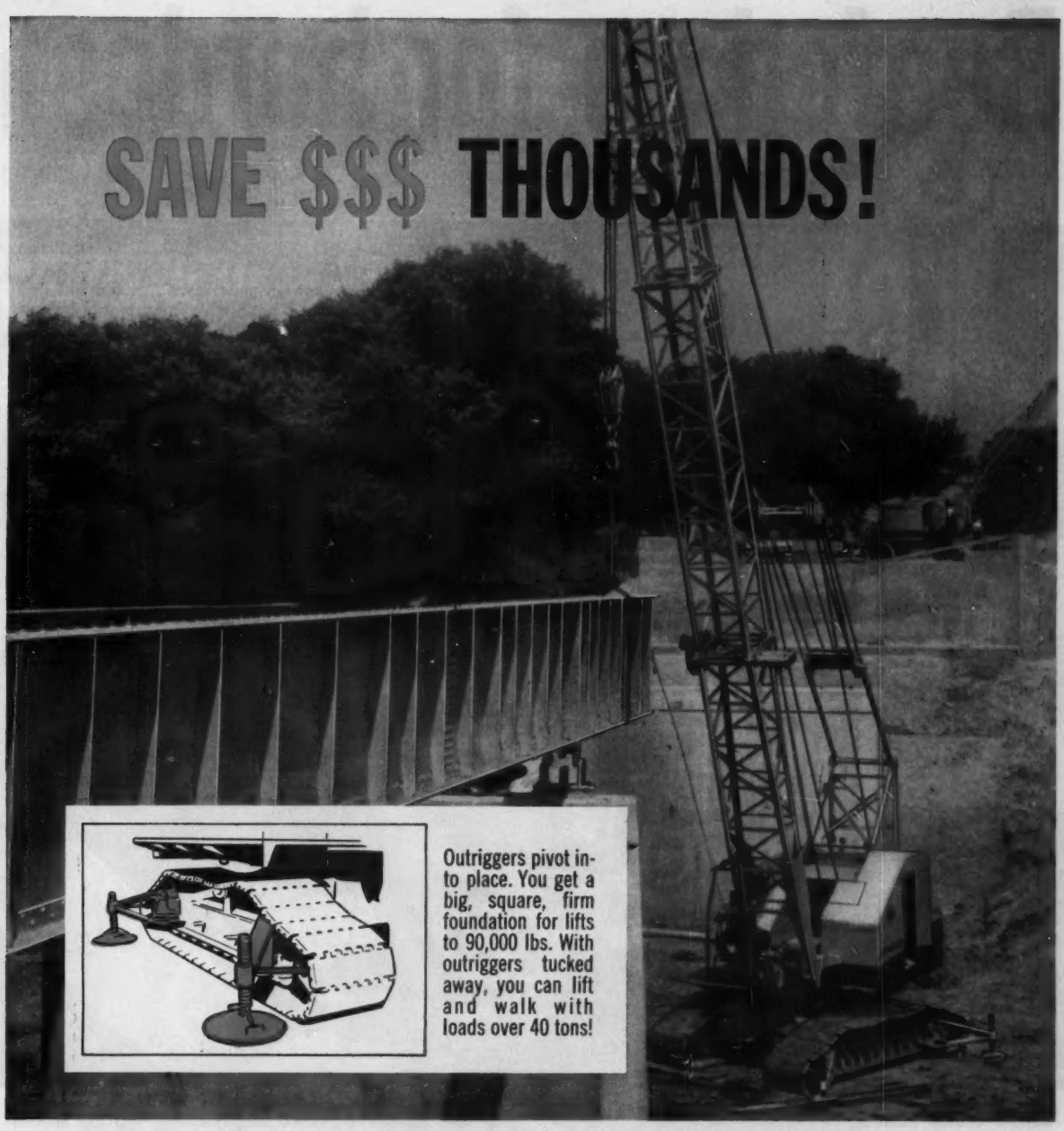
Congress, however, is keeping a close check on missile work and any significant outbreak of labor trouble will bring a resumption of pressure on Capitol Hill for legislative curbs. The good labor record was marred recently by a walkout of craft workers at a Titan missile base near Denver, Colo. The brief walkout ended with the dispute going to the missile sites commission for solution.

Long Term Foreign Aid Voted

A variety of large construction jobs, and the engineering needed to get them through the planning stage, will get the biggest slice of the U.S.'s new, long-range foreign aid program. Some $7.2-billion will be spent on foreign aid in long-term development loans over the next 5 yr. The first year's appropriations for this program will be more than $1 billion.

At least 60% of the total Alliance-for-Progress long-term aid for Latin America will go into construction work and pre-project planning. Aid experts estimate that some $300 to $400 million yearly will be spent by Latin American governments and international lending agencies on consulting and engineering work.

This emphasis on engineering and consulting work holds true for other nations in Africa and Asia. The U.S. now is insisting that receiving countries have well-documented, long-range economic planning and sophisticated project outlines in order to be eligible for aid money. Many governments in these countries don't have the staff to do this and will be hiring U.S. and European firms.


SAVE $$$ THOUSANDS!
Outriggers pivot into place. You get a big, square, firm foundation for lifts to 90,000 lbs. With outriggers tucked away, you can lift and walk with loads over 40 tons!

KOEHRING 545 SPRAWLER LIFTS AS MUCH AS OTHER MACHINES COSTING UP TO $20,000 MORE

The Koehring 545 Sprawler lifts an amazing 90,000 pounds. And it actually costs $20,000 less than 2 and 2½-yd. machines in the same range of lift capacity.

Don't raise an eyebrow. It's a fact. Your Koehring distributor can prove it and will welcome the opportunity to show you these figures in detail.

Another astonishing fact — Sprawler, is smaller in size. Moves from job to job faster, easier . . . takes less time to ready for work and travel.

From the ground up, Sprawler is truly something special. Its unique one-piece carbody, long, wide crawlers, and pivoting outriggers resist torsional strains at every working angle . . . enable Sprawler to outlift its own working weight by 14%!!

See your distributor about the 545 Sprawler . . . and the companion 330 Sprawler that gives you comparable cost-saving features. See him today!

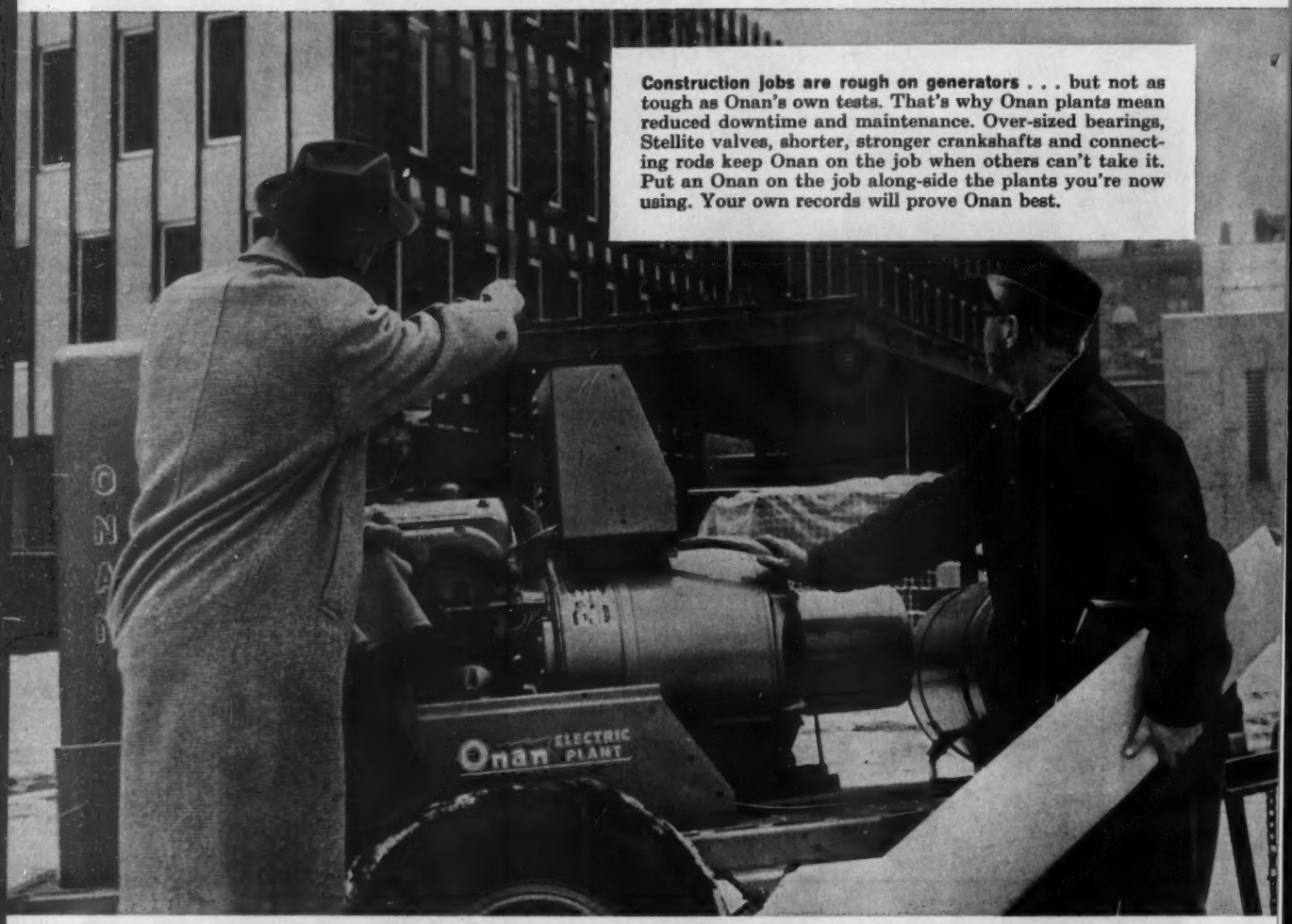
KI04

KOEHRING MEANS HEAVY DUTY

KOEHRING
DIVISION OF KOEHRING COMPANY
Milwaukee 16, Wisconsin

Circle 13 on Reader Service Card

Beefed up for hardest



Construction jobs are rough on generators . . . but not as tough as Onan's own tests. That's why Onan plants mean reduced downtime and maintenance. Over-sized bearings, Stellite valves, shorter, stronger crankshafts and connecting rods keep Onan on the job when others can't take it. Put an Onan on the job along-side the plants you're now using. Your own records will prove Onan best.

Stellite coated exhaust valves and valve seats. One of toughest alloys known. Gives you up to 300% longer valve life than uncoated valves. It's the important details like this that make Onan more economical in the long run.

Exacting standards govern manufacture—years of specialized experience and extensive testing facilities control the quality of Onan Power Plants. Over 1000 different types and sizes of plants are produced by Onan.

use...even abuse

Onan electric plant still delivers full power after 12,197 hour test—equal to 487,888 miles

A grueling endurance test that lasted one year, nine months and 12 days could not stop Onan test plant #1068. Onan engineers used this production-built unit for an endurance run—and after it was all over, it still generated the full rated power promised on the nameplate. Proof that Onan's exacting standards and production testing give you a power plant with long, dependable life built in.

Over 1,700 other endurance units have been run by Onan engineers. In these tests every design feature and part has to prove itself before it can become a part of the Onan you buy. In addition, every type and size Onan plant is tested under all operating conditions which could conceivably affect performance on your job.

Hours of running in and testing under full load are given *every* Onan before it is shipped. An independent testing laboratory then spot tests Onan Plants that have already been tested by Onan—double assurance that every Onan will deliver its full nameplate rating. Only then does an Onan production run qualify for Performance Certification.

Buy *proven performance* when you buy an Electric Plant. See your authorized Onan distributor or dealer. You can depend on him for a lifetime of factory parts and service. He's listed in the Yellow Pages.

ONLY ONAN GIVES YOU THIS CERTIFICATION

Onan
Onan
PERFORMANCE CERTIFIED
We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.

World's Leading Builder of Electric Power Plants

ONAN DIVISION, STUDEBAKER-PACKARD CORPORATION • 2571 UNIVERSITY AVE. S. E., MINNEAPOLIS 14, MINNESOTA

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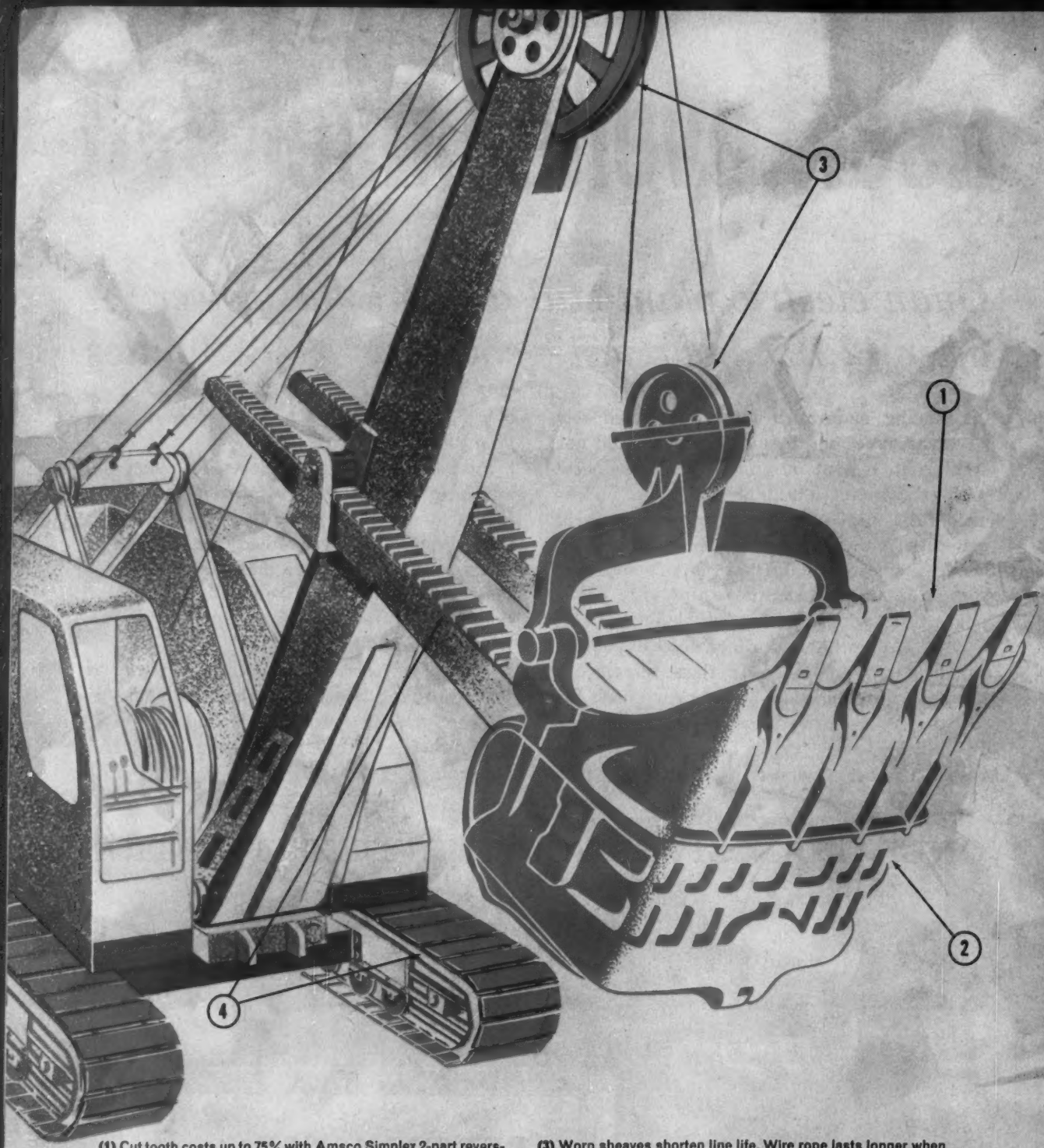

(1) Cut tooth costs up to 75% with Amsco Simplex 2-part reversible dipper teeth. Amsco Simplex teeth give you longer digging life while maintaining sharpness. Positive point-to-adapter pin locks stay tight under extreme conditions of impact, side blows, vibration or other shock. Simplex points stay on and are reversed in minutes per dipper. Replace present teeth with Simplex and measure the difference.

(2) Amsco dippers are made of manganese steel—"the toughest steel known"—containing 12-14% manganese. This tough steel provides as much as a 10 to 1 advantage over carbon steels under the abuse of impact and abrasion. Amsco manganese steel work hardens under impact, self-polishes under abrasion and is easy to weld when buildup or repair is needed. All types of dippers are made by Amsco—two-piece welded dippers, renewable-lip designs, Mesabi types, special dredge types and other styles to order.

(3) Worn sheaves shorten line life. Wire rope lasts longer when running in sheaves that stay smooth and even throughout their life. Ordinary flame-hardened steel or chilled cast iron sheaves score, wear and splinter. Splinters cut into wire rope. Amsco manganese steel sheaves work harden under repeated impact and acquire a polish that eliminates splinters. And when a high loading bangs the two sheaves together, Amsco sheaves take the beating without breaking.

(4) Tough, reliable Amsco crawler shoes give longer life for any shovel or backhoe. Amsco crawler shoes are available to fit every make of shovel or dragline and in special designs to order. Other Amsco shovel parts include racks, bevel gears, shipper shaft pinions, idlers, sprockets, dipper lips, fronts and doors. See your power shovel manufacturer for parts that give maximum service life and satisfaction.

TRUST THE COMPANY THAT BUILT YOUR SHOVEL

when ordering replacement parts

Manufacturers of power shovels and draglines can't take chances on inferior wear parts spoiling the good name of entire machines. That's why leading shovel manufacturers use dippers, teeth, crawler shoes, gears, racks and pinions, and sheaves made of Amsco Manganese and Alloy Steels.

They know, and so will you, that the same high quality found in original equipment castings is built into every Amsco replacement part offered. These parts will fit right and work right because they are designed to fit and be in balance on your equipment.

Your equipment manufacturer or his distributor is the best source of information on the *correct* parts to use—parts of genuine Amsco Alloy Steel.

AMERICAN Brake Shoe COMPANY

They're backed by experience...

AMSCO

AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS, ILLINOIS

1681

Other plants in: Denver • Los Angeles • New Castle, Delaware • Oakland, California • St. Louis
In Canada: Joliette Steel and Manitoba Steel Foundry Divisions
In Mexico: Amsco Mexicana, S.A.

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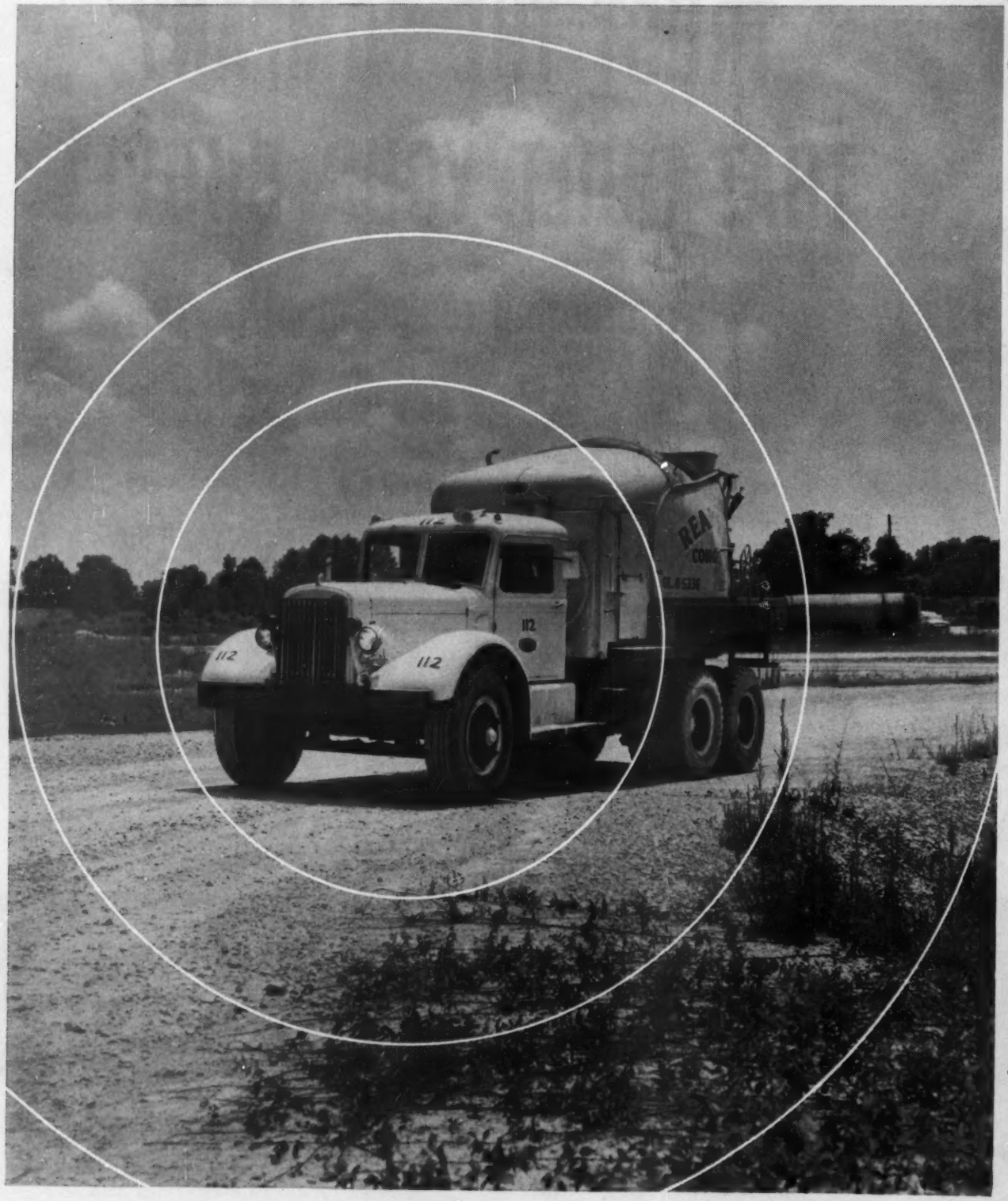
Louisville's Ready Mix Concrete



Co. gets ACtion with AC

"We have tried other spark plugs and oil filters but ACs give us the best results. We use AC spark plugs and oil filters exclusively in all our truck engines."

Ben J. Campbell,
General Superintendent,
Ready Mix Concrete Co.,
Louisville, Ky.

The Ready Mix Concrete Co. of Louisville is one of that city's largest suppliers of concrete products. Each of its 31 modern, radio-telephone trucks averages a thousand miles a week delivering ready mix cement, concrete blocks and bulk aggregates. As such trucks must, these trucks haul heavy loads on rough roads and no roads. They stop and start in city traffic, and move fast on the highway.

The dust and grit of this operation offers a tough test of spark plugs and oil filters.

The Ready Mix Concrete Co. uses AC Spark Plugs and AC Oil Filters for all its engines, including the ready mix auxiliaries and the engines of the fork lift trucks that hoist concrete blocks.

"We use AC Spark Plugs because they work better, longer—and we use AC Oil Filters because they keep our engines and oil cleaner," says Ben Campbell, General Superintendent.

AC Fire-Ring Spark Plugs and AC Triple-Trapper Oil Filters will perform the same way in your operation. Call your AC Supplier and start getting the money-saving, reliable ACtion you get with AC!

AC SPARK PLUG ⚛ THE ELECTRONICS DIVISION OF GENERAL MOTORS

Your best line of ACtion

AC

FIRE-RING
SPARK PLUGS

TRIPLE-TRAPPER
OIL FILTERS

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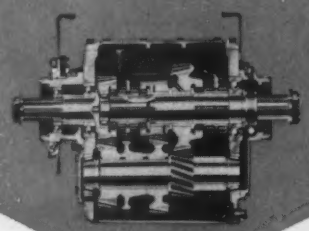
- High Capacity
- Low Initial Cost
- Reduced Maintenance
- Flexibility of Ratios



for medium-heavy duty trucks and tractors, specify one of the eight

Fuller '65 Series

3-Speed Auxiliary Transmissions

available from all truck manufacturers upon specification.
Top-mounted power take-off optional.

'65 SERIES (Medium-heavy-duty) RATIOS

	SPLITTER RATIOS		DEEP REDUCTION
MODEL	High	Inter-mediate	Low
3-A-65	.754	1.00	2.221
3-B-65	.804	1.00	1.239
3-C-65	.754	1.00	1.239
3-D-65	.804	1.00	2.221
3-E-65	.804	1.00	1.74
3-F-65	.754	1.00	1.74
3-G-65	1.00	1.32	2.221
3-H-65	1.00	1.32	1.74

For the right transmission for every operation

Specify

Specify the MODEL

FULLER TRANSMISSION DIVISION
EATON MANUFACTURING COMPANY
KALAMAZOO, MICHIGAN
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Job Talk...

Piggyback Roller Rides on Rubber

Young Brothers Construction Co. of Waco, Tex., combined a sheepsfoot roller and a scraper to make a two-in-one compacter. The rig can ride over city streets without damaging pavement.

Young Bros. took the bowl off the scraper and mounted the roller axle on an arm that swivels from the frame of the scraper. They added two bins for ballast at the top and rigged cables to raise and lower the roller assembly.

With the roller lowered the rig is a dual sheepsfoot-rubber-tired roller. Two extra tires at the rear of the rig increase compactive effort. When the roller is raised, the rig rides on the rubber tires of the scraper and the roller easily clears curbs.

Underwater Bents Hold Long Pipe Sections

A combination of bolted joints and long pipe lengths speeds installation of a 775-ft underwater pipeline crossing the Genesee River near Rochester, N.Y. L. A. Wells Construction Co. of Cleveland elected to bolt the extra-long sections underwater rather than lay a continuous welded pipe because of the many bends in the line.

A barge-mounted crane with a 75-ft boom places the 50-ft-long, 24-in.-dia Armco pipe sections 12 to 40 ft below the surface of the river atop timber bents. Spaced on 15 and 30 ft centers, the bents consist of two timber piles—20 to 40 ft long—capped with 8x12-in. timbers.

Two timber saddles are clamped on each pipe section and predrilled before installation. As the crane places the pipe atop the bents, divers position the saddles atop the bent caps. With an air drill, each diver sinks holes through the predrilled saddles and into the caps to permit bolting the saddles to the bents. The diver then tightens the 20 bolts at each pipe flange with an impact wrench to complete the job.

continued on page 25

Only eight hours transmission downtime per unit in approximately 2700 hours of operation over a period of 2½ years averages out to

99.71% AVAILABILITY!

A. F. Keyes Co., Inc., South Milwaukee, Wisconsin, is using Fuller 5-G-1520 5-speed Transmissions in four Le Tourneau-Westinghouse Scrapers on construction projects in southwestern Wisconsin. None of the four units has had more than eight hours of transmission downtime—and each has logged more than 2700 hours of operation.

Two of Keyes' L-Ws are Model B Full Packs, and two are Model B BM-2s. The constant-mesh, spur-gear Fuller 5-G-1520s feature, as standard equipment, the Fuller air-actuated countershaft brake, which permits quick, easy up-shifts without double clutching. Also standard on the 5-G-1520 is the Fuller pressure lubrication and filtration system, which keeps gear oil clean, provides longer gear and bearing life and increases availability for your operation.

Bernard Schuh, Chief Mechanic for Keyes, says, "We're extremely pleased with both the performance and reliability of the Fuller 5-G-1520 Transmission. If you buy a good piece of equipment and take care of it, it's going to perform profitably for you. And that's certainly the case with the Fuller Transmissions in our LeTourneau-Westinghouse Scrapers.

FULLER TRANSMISSION DIVISION

EATON MANUFACTURING COMPANY

KALAMAZOO, MICHIGAN

Sales & Service: West. Dist. Branch, Oakland 6, Cal. • Southwest Dist. Office, Tulsa 3, Okla. • Automotive Products Co., Ltd., Brock House, Langham St., London W.1, England, European Rep.

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NEW 105-hp 145T JOINS THE ALLIS-CHALMERS MOTOR GRADER LINE

It's BIG . . . it's POWERFUL . . . and built to standards that give you the best performance and work-ability you ever had in a grader this size. A steady worker, the 145T is powered to handle all your blade jobs. Its big-grader features make it an outstanding unit for every contractor bidding for profit or every public body working on a tax dollar.

Check it yourself. The new 145T handles like a dream . . . works like a demon.

New 7000 engine. Proved in other Allis-Chalmers engines, the controlled turbulence, open combustion-chamber design of the turbocharged 7000 gives thorough mixing of air and fuel for complete, fast and even combustion . . . high fuel economy.

Built to answer every demand. A 145T will give you reliable performance on every job. The long-wearing, ceramic-button clutch, heavy-duty transmission and gear train, sturdy main frame and blade controls, are all built with strength in reserve to handle your toughest dirt moving.

More production with this 3-point combination. (1) High-arched axle lets bigger windrows reach the blade. (2) Extra clearance from circle to cutting edge of ROLL-AWAY moldboard allows lively, high-rolling action of material. (3) Engine power that will really lug to get the job done.

It's a pleasure to operate. The flat, clear deck gives a man plenty of room. Exclusive toggle-type controls engage positively without backlash. There's excellent visibility in all directions. Operators work in comfort . . . produce more on every shift.

See the new 145T at your dealer . . . or let him arrange a demonstration. You'll like what you see. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wis.

STEP UP YOUR POWER with

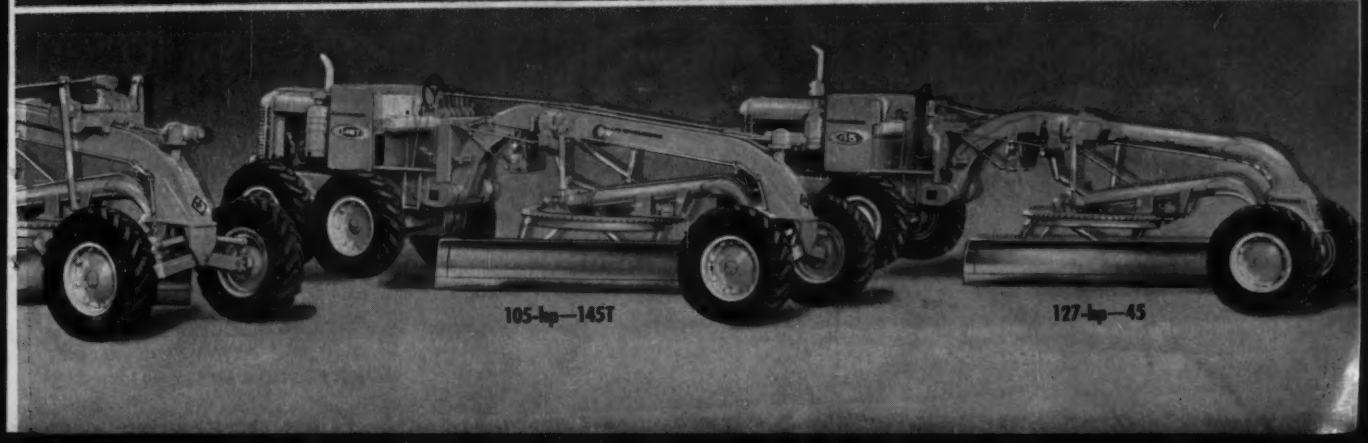
P erformance
O perator comfort
W earability
E ase of maintenance
R eliability

Now available in Allis-Chalmers yellow or Persian Orange at no extra cost.

ROLL-AWAY is an Allis-Chalmers trademark

ALLIS-CHALMERS
POWER FOR A GROWING WORLD

ALLIS-CHALMERS
145T


105-hp—145T
127-hp—45

Cut fleet repair costs

NEW RPM
DEPOSIT-FREE
MOTOR OILS

Now new RPM SPECIAL joins RPM SUPREME to cut the cost of your fleet operation no matter what grade of oil you use.

RPM Supreme was the first multi-grade motor oil with an **ashless detergent.** Now it's matched with new single-grade RPM Special. Both halt engine wear, keep combustion chambers so clean — rings, screens and crankcase so free of sludge that you get far longer engine life.

Result: you can save hundreds of dollars in overhaul costs . . . get cleaner, smoother engine performance for your fleet. Even under the toughest operating conditions, you'll be money ahead when you choose from the only complete line of deposit-free motor oils:

UNSURPASSED RPM SUPREME...an all season multigrade oil that cuts friction so effectively it saves up to 15% on gas . . . gives far easier starting.

NEW RPM SPECIAL . . . the only single grade deposit-free oil available.

For real engine economy in passenger cars, light and heavy duty gasoline trucks, ask our local representative about RPM *deposit-free* Motor Oils or write any company listed below.

MOTOR OILS RPM

STANDARD OIL COMPANY OF CALIFORNIA San Francisco 20
STANDARD OIL COMPANY OF TEXAS El Paso
CALIFORNIA OIL COMPANY Perth Amboy, N.J.—Denver

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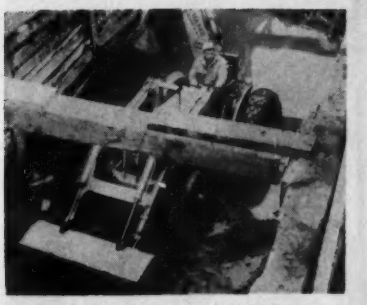
▲ *Circle 24 on Reader Service Card*



Versatile Rig Works in Tight Quarters

A small industrial tractor with backhoe and loader attachments takes the backache out of clean-up on an open-trench sewer project in Staten Island. Contractor Herbert Van Name uses a Case 420 to trim and shape the bottom of the muddy trench.

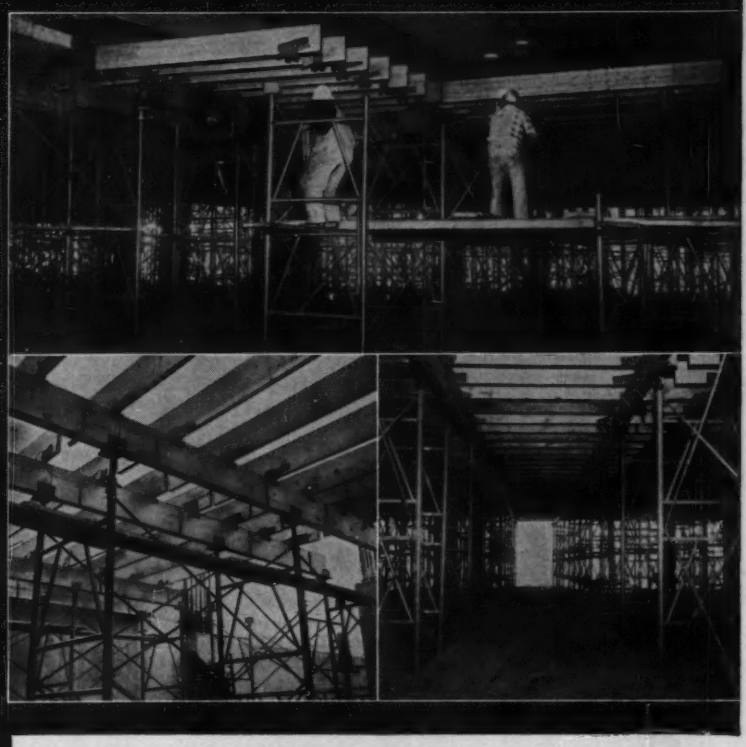
The rig maneuvers like an eel in the tight quarters of the narrow trench, working without obstruction under the struts that brace its heavy shoring. The contractor estimates that the loader-backhoe replaces a 12-man crew, and does the job in half the time required by hand labor.

Dumbwaiter Serves Aggregate Samples

At Keystone Dam near Tulsa, a job-built dumbwaiter lowers aggregate samples from weighing hoppers of the concrete plant to ground level. Hyde Construction Co. of Jackson, Miss., built the device for the convenience of Army Engineer inspectors.

A caster-mounted bucket holds the aggregate. It's lowered down the wire-enclosed elevator shaft by an electric motor, which can be controlled from either the weighing room or the ground. Each sample weighs 600 lb—too heavy for manual handling.

here's DOUBLE shoring capacity!



SAFWAY HEAVY DUTY FRAME SHORING

carries loads on 50% fewer frames; cuts erection and dismantling time

CARRYING up to 20,000 lbs. per frame, this equipment has *twice the capacity* of standard steel frame scaffolding. Thus any given load can be supported on *half as many frames*... with corresponding savings in assembly and dismantling time, transportation and storage. Also, heavier beams, slabs, roofs, etc., can be shored safely at virtually any height.

LOAD DISTRIBUTION—Frames carry 10,000 lbs. on each vertical leg—or 5,000 lbs. per leg plus 10,000 lbs. on high load-bearing top horizontal.

FEW PARTS—Only 3 frame sizes with screw jacks meet all job height requirements.

PRECISION HEIGHT ADJUSTMENT—With heavy duty screw jacks at the top, bottom or both.

TOOL-LESS ASSEMBLY—Frames mount on coupling pins; cross-braces mount on studs with wing nuts.

SAFWAY

SAFWAY STEEL PRODUCTS, INC.
6228 W. STATE ST., MILWAUKEE 13, WIS.

WRITE FOR BULLETIN 1110A

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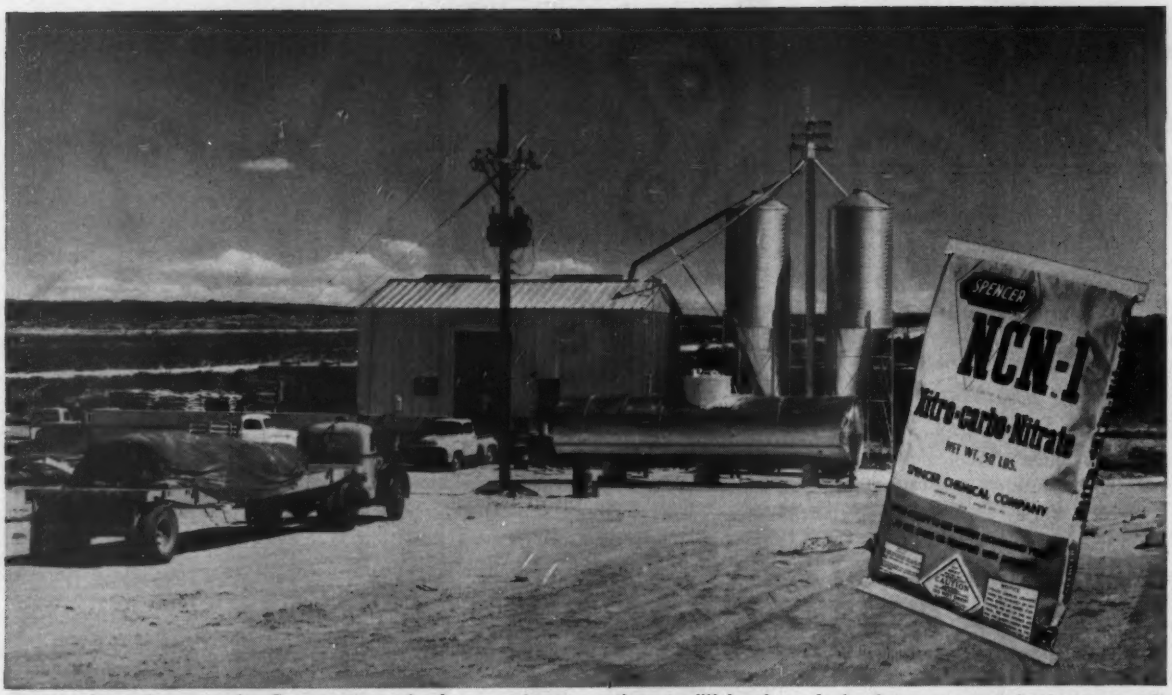


First local supply center for Spencer pre-mixed ammonium nitrate blasting agent (NCN-1) is located at Carlsbad, New Mexico. Similar plants are proposed for other sections to fill local needs for low cost pre-mixed compounds of guaranteed uniform quality. Spencer NCN-1 Nitro-carbo-nitrate will be available in handy 50-pound bags.

Spencer announces NCN-1*

. . . another new service to lower blasting costs

More blasting efficiency for every dollar you spend! That's the promise of Spencer's far-ranging research program. This continuing program of investigation explores every new and better method of making blasting more efficient, safer, and less expensive.

Newest development in Spencer's program of maximum service to mining and construction users of blasting materials is an NCN-1 (Nitro-carbo-nitrate: pre-mixed ammonium nitrate blasting agent) plant in Carlsbad, New Mexico.

Designed to deliver NCN-1 by truck in handy 50-pound bags to the site where they are to be used, this new plant is the first of a network of producing depots that will provide local sources of supply to users in every part of the country.

Pre-mixing of the ammonium nitrate blasting agents provides a cleaner, easier to handle compound with more uniform blast output. Initially, the Carlsbad plant output has been established to meet current daily demands, but capacity expansion is planned to meet anticipated future increases in local usage.

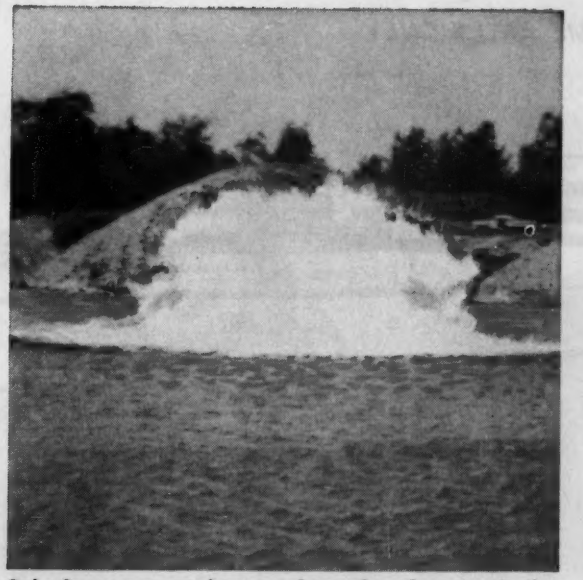
And, of course, Spencer's NCN-1 is substantially less expensive than dynamite. But that's not all. Spencer's NCN-1 will provide 10% to 20% more blast energy than field compounded ammonium nitrate-fuel oil mixtures. That's accomplished through easier detonation resulting from the optimum density of the Spencer mixture and the special prill structure of Spencer's N-IV* ammonium nitrate which enables it to absorb fuel oil more evenly.

Spencer research has paid other use dividends to users of blasting materials. SPENITE*, Spencer's remarkably efficient boosting material, was made possible when Spencer investigators proved that in boosting ammonium nitrate-fuel oil mixtures, the heat generated was more important than the velocity of the detonator. As a result, SPENITE boosters provide 50% more explosive heat than any other commercial booster.

And Spencer research is responsible for the efficient Powder Monkey* pneumatic loading machine. 40 of these units currently in the field have proved that a two-man team using the Powder Monkey can outperform any other method of filling horizontal holes with blasting charges. It's another way Spencer makes blasting more efficient and at the same time, slashes costs to the bone.

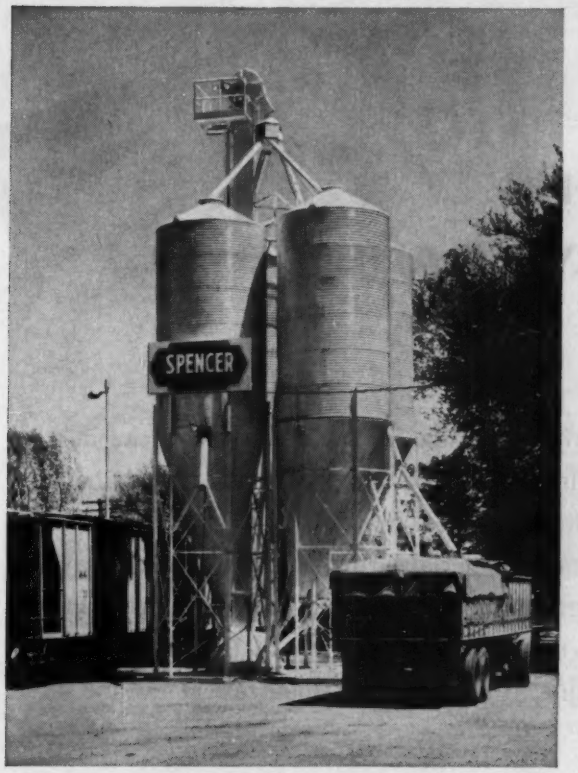
For information on any of the advanced Spencer products for blasting, simply write to Spencer Chemical Company, Dwight Building, Kansas City, Missouri.

*Trademarks of Spencer Chemical Company

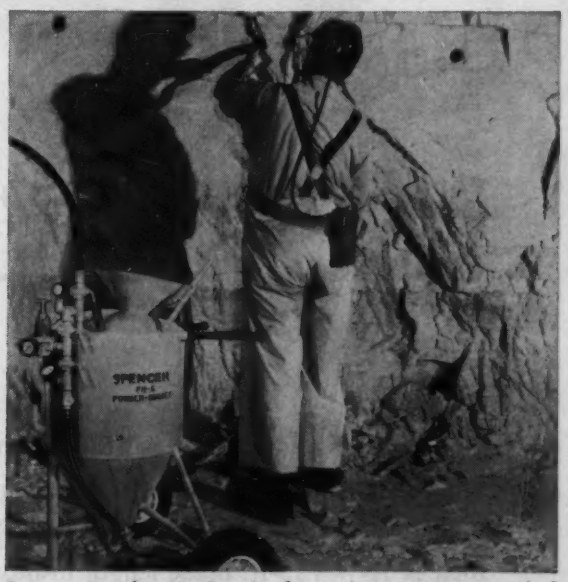


Only Spencer research uses advanced underwater testing methods adopted from military research to develop safer, more efficient blasting methods. Tests have proved ammonium nitrate and fuel oil delivers up to seven times more useful energy per dollar than gelatin dynamites.

A low-cost initiator is provided by Spencer SPENITE. Made specifically to detonate ammonium nitrate mixtures, SPENITE threads easily on detonating cord. Knots hold boosters in place when cord is lowered into hole. Results: big cost reductions in the detonation.



Bulk ammonium nitrate (N-IV), a step forward in reducing material and handling costs, has been accepted by a number of users. Why not investigate the pickup or delivery of money-saving bulk ammonium nitrate from Spencer. Customers report their explosive costs cut in half when they use Spencer N-IV.



Spencer Powder Monkey is the easiest, most economical method ever devised to fill blast holes. One two-man team recently filled and blasted more than 250 holes in one eight-hour shift while using this Spencer Powder Monkey pneumatic loader.

*Trademarks of Spencer Chemical Company.

Look to Spencer research for continual advances in blasting efficiency and economy.

SPENCER®

SPENCER CHEMICAL COMPANY

Dwight Building • Kansas City, Missouri

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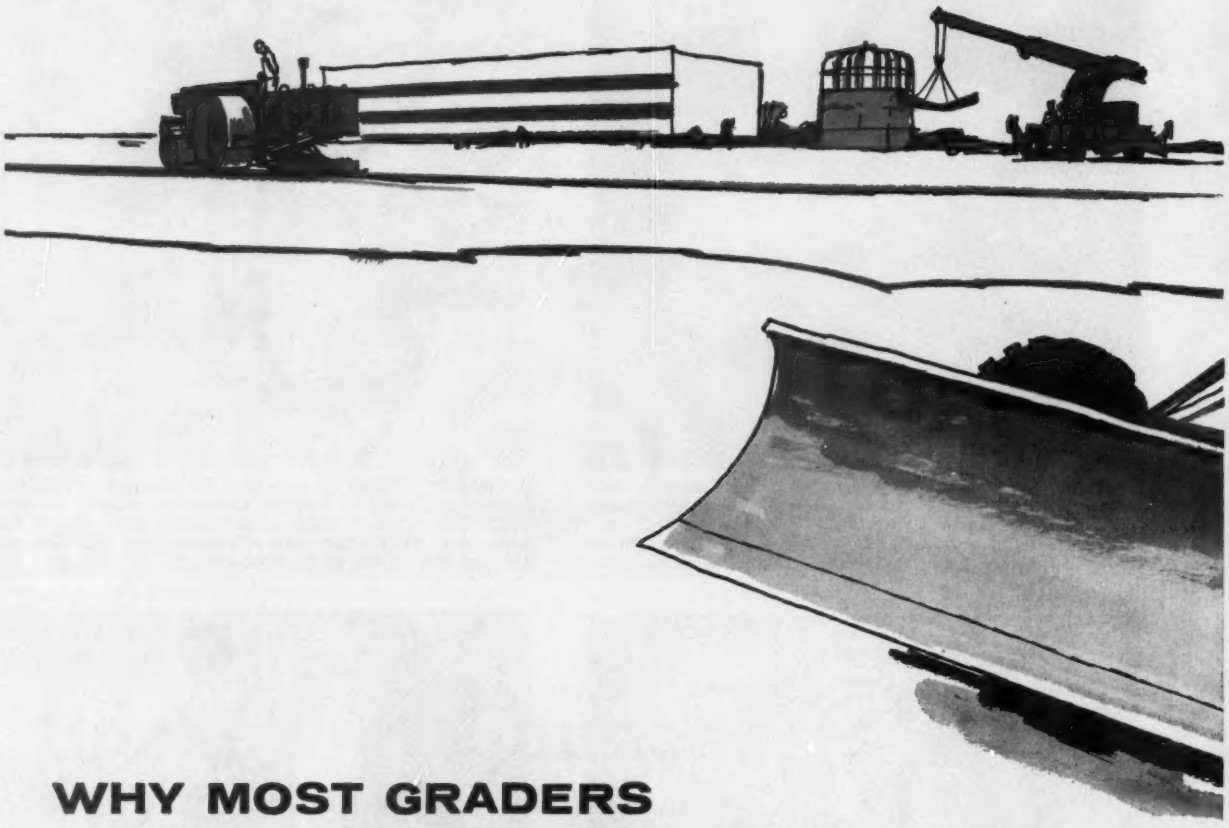
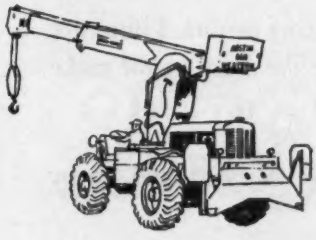
AUSTIN-WESTERN PRODUCTS SAVE TIME AND MONEY



WHY MOST GRADERS CANNOT USE FULLY LOADED BLADES

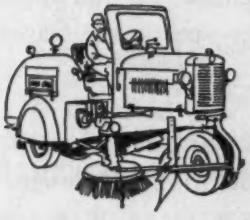
With a fully loaded blade it would be nearly impossible for them to work ahead in a straight line and yet move material the maximum distance. Sidethrust can toss ordinary graders about like corks. Not so with Austin-Westerns. For you can use every single inch of A-W's 13-ft. blade length to move more material farther and faster . . . always in a straight line . . . than with any other grader. *Why?* Because of all-wheel drive and all-wheel steer. No front-end dead weight means balanced power at the blade. Rear steers, too, so operator can offset the machine to eliminate all sidethrust at the toe of the blade to permit use of its full length.

An A-W is the one machine contractors can use for both rough and finish grading. Hydraulically controlled; side-shifting moldboard slips nimbly around stakes and forms. Completely controlled from cab; no linkages to change. 9 models; 4 and 6-wheel machines—weights to 30,000 lb., power ranges to 176 hp. *Make us prove* the time and money savings advantages of an Austin-Western. Just write.



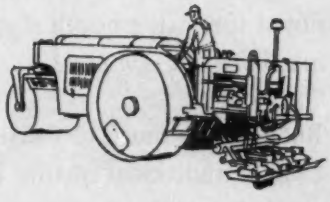
A-W HYDRAULIC CRANES

5 models. Capacities to 11 tons. Self-propelled and truck or stationary mounting. "Live" hydraulic booms. Booms extend up to 48 ft.



A-W MOTOR SWEEPERS

2 models: 2-yd. Model 40; 4-plus Model 60. Safe, easy front steer; full visibility. Simplified design; broom and hopper in rear.



A-W COMPACTION EQUIPMENT

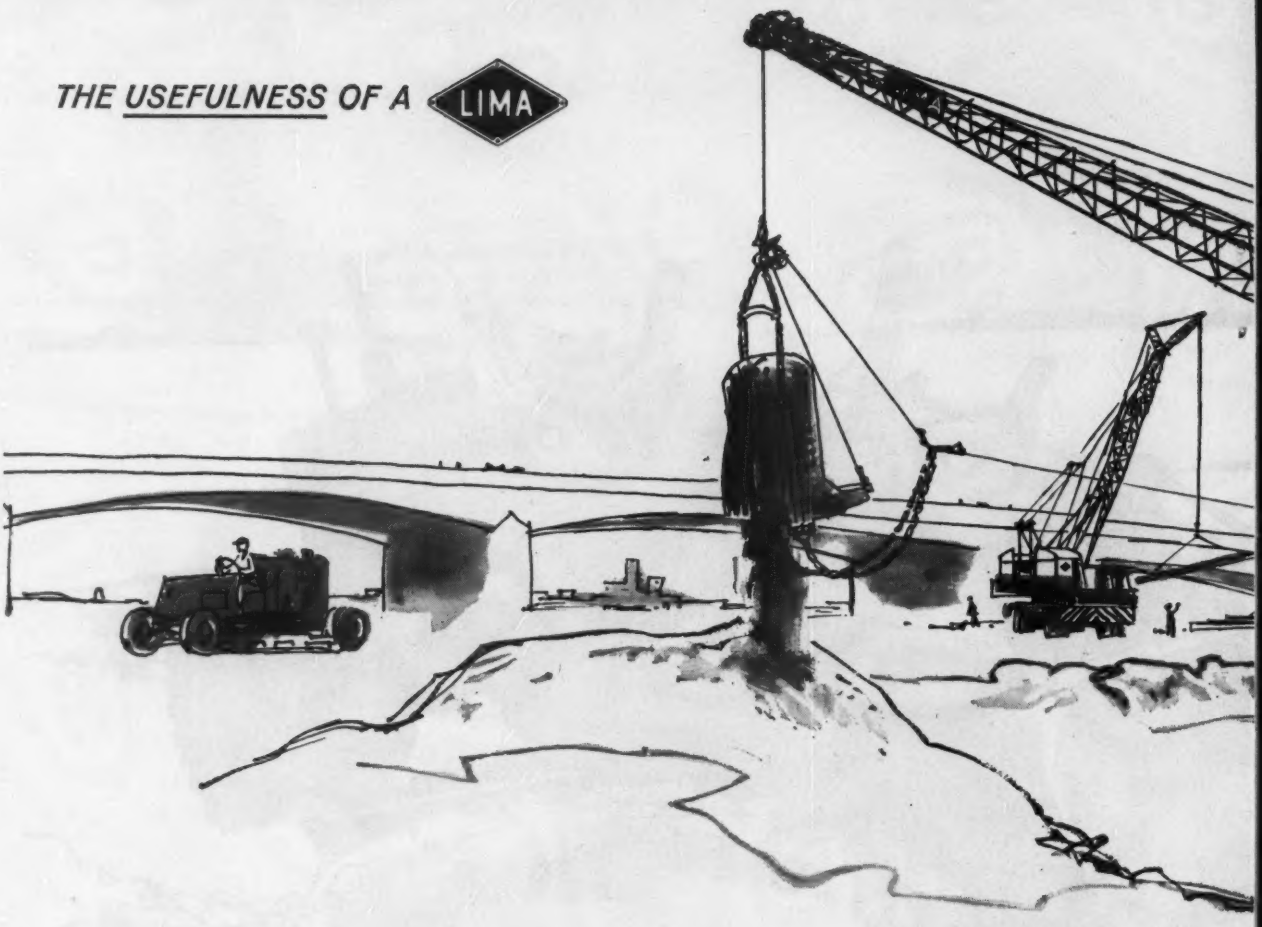
Variable weight 2 and 3-wheel rollers to 14 tons; 3½-6 ton portable; Roller-Compactor; vibratory attachment for most 3-wheelers. Also new 9-wheel Pneumatic Roller.

Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Circle 29 on Reader Service Card

THE USEFULNESS OF A LIMA



HOW TO CAST FOR PROFIT

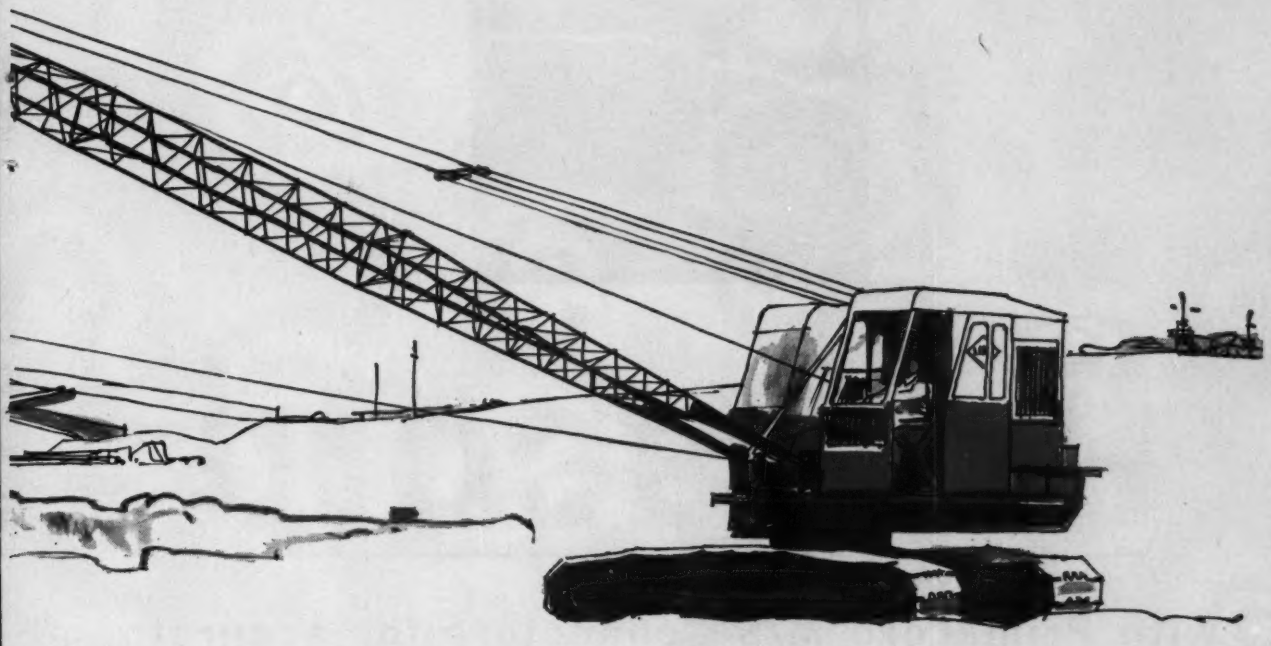
Long, precision casts with Lima draglines help pull in extra excavating profits. Limas are noted for fast, smooth digging cycles—partly the reason they are *the most useful make machines you can buy!*

But there is more to outstanding performance than meets the eye. It is backed up by Lima's traditional quality in manufacturing and design.

Big, wide drums are mounted on antifriction bearings for smooth, free spooling when the bucket is cast. Balanced machinery weight does away with need for excessive counterweight so that you can work with *long booms at low angles.* Long, wide crawlers hug the ground for extra stability on soft footings; antifriction bearings protect all wearing points. On Limas all gears, smaller parts and shafts that are subjected to extra wear are flame or induction-hardened for longer life.

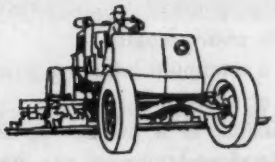
Maintenance is low because Limas are better built. For the same reason Limas can be counted on to stay on the job and earn more profit for you. Ask us to prove it to you.

6120

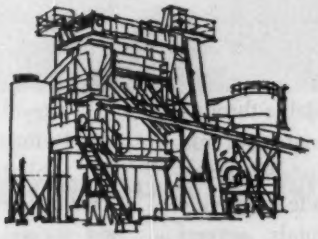


CAPACITIES

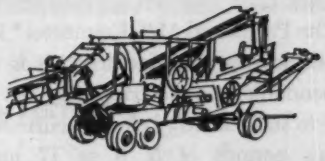
DRAGLINES—Variable
TRUCK CRANES—20 to 80 tons, boom-jib combinations to 250 ft.
WAGON CRANES—20 to 75 tons
CRAWLER CRANES—15 to 140 tons
CRAWLER MOUNTED SHOVELS—¼ to 8 cu. yd.
CRAWLER MOUNTED PULLSHOVELS—to 4½ cu. yd.



LIMA MODEL D ROADPACKER—Six vibrating shoes consolidate fast, deep for profitable single-course construction; available in 12-shoe Super model.



LIMA MADSEN ASPHALT PLANTS—available in models with batching capacities from 1000 to 10,000 lb.



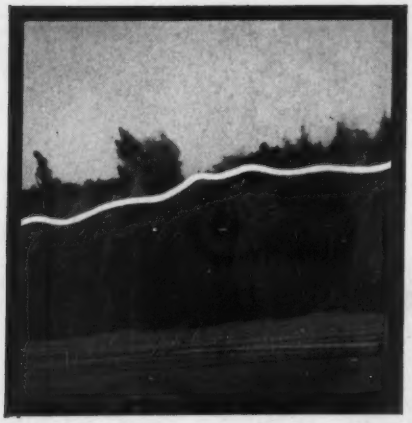
LIMA AUSTIN-WESTERN portable and stationary crushing, screening and washing equipment; including jaw crushers, feeders, screens, elevators, conveyors, bins.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division • Lima, Ohio

BALDWIN · LIMA · HAMILTON

Circle 31 on Reader Service Card



Primacord®

with Primacord M/S Connectors for accurate dependable millisecond surface-delay blasting

You can enjoy the advantages of delay blasting without the hazards of sensitive delays in the holes. In open pit mines, quarries and construction blasting – medium to large diameter holes – use the Primacord System of initiation with Primacord M/S Connectors tied into the Primacord trunklines.

An infinite number of delay firing patterns is possible. And the size or length of a blast is limited only by the blast area.

The Primacord M/S Connector* is available through all explosives manufacturers. It is an economical and dependable non-electric delay device that is insensitive to static or stray electric currents. Made to provide delay periods of 5, 9 or 17 milliseconds, several Connectors may be used in series when longer delays are required.

Primacord Detonating Fuse has proved its outstanding advantages over many years of use:

1. It is simple, easy and economical to use.
2. It cannot be set off by sparks or stray electrical currents – or by normal vibration, friction or shock.
3. It detonates at a speed of almost four miles a second along its entire length.
4. Primacord has a minimum initiating strength of a blasting cap at all points.

Primacord is available in a number of standard and special types developed to meet varying needs. For further information consult your explosives manufacturer or write

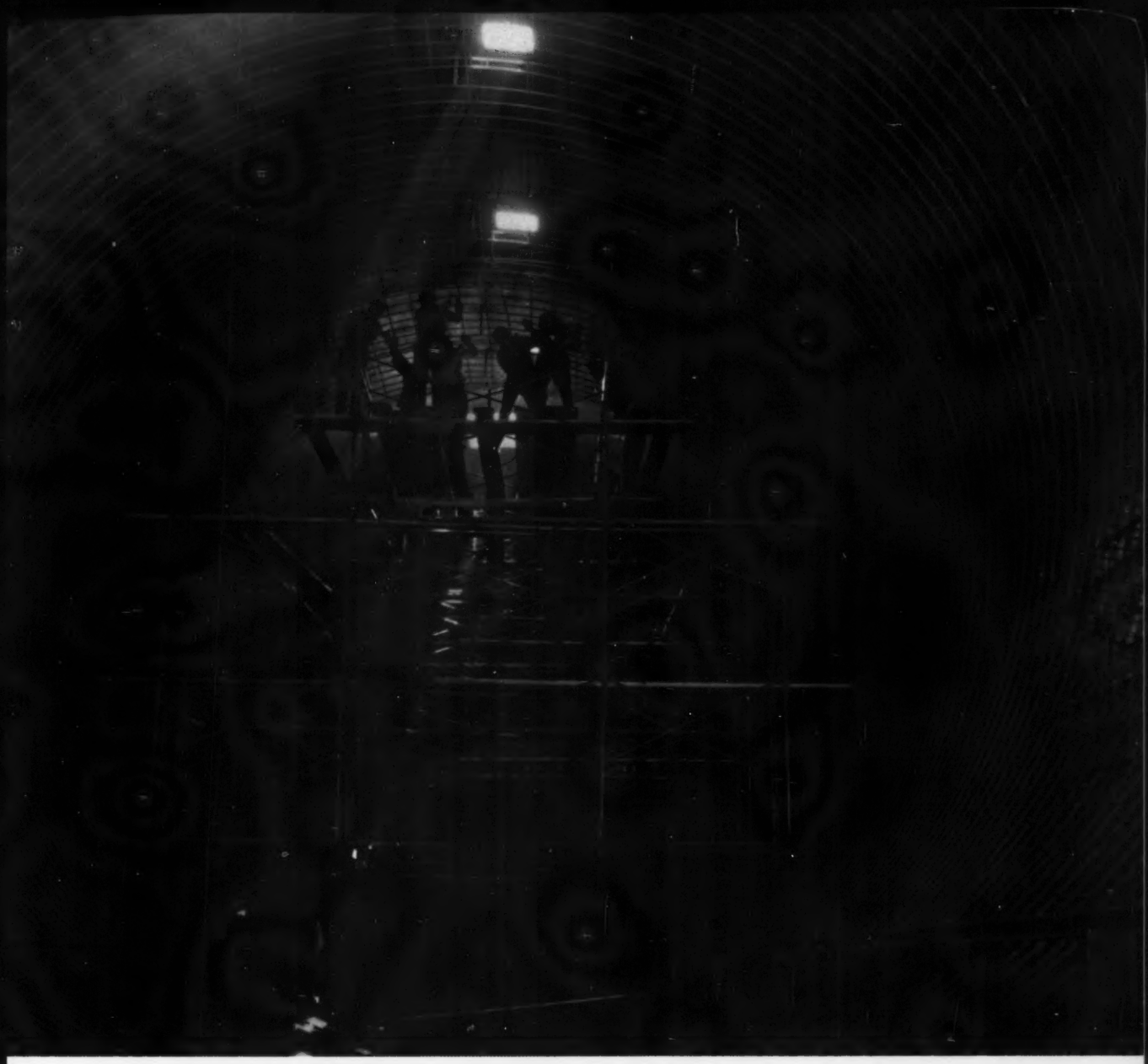
*Manufactured by E. I. du Pont de Nemours & Company (Inc.)

THE ENSIGN-BICKFORD COMPANY
Simsbury, Connecticut • *Since 1836*
THERE IS A TYPE OF PRIMACORD® FOR EVERY TYPE OF BLASTING

E-B

Free! NEW GUIDE AND CONDENSED MANUAL: "PRIMACORD DETONATING FUSE ... WHAT IT IS ... HOW TO USE IT." ASK YOUR EXPLOSIVES MANUFACTURER OR WRITE US GIVING YOUR COMPANY NAME.

Circle 32 on Reader Service Card



Steel tunnel sections built in Maryland . . . floated 200 miles to Virginia

Steel supplied by Bethlehem: plates, structural shapes, bars, H-piles.

Eleven of these 33-ft-diameter tunnel sections, each measuring more than 300 ft long, and one measuring 115 ft long, were constructed at Port Deposit, Md., side-launched into the Susquehanna, and towed to the Elizabeth River in Virginia. Here they were sunk into position to form a two-lane vehicular tunnel connecting Norfolk with Portsmouth.

Each section contains nearly 600 tons of steel: 450 tons of plate for the inner and outer shells; 70 tons of shapes and angles, and 30 tons of flat bars for stiffeners; and 40 tons of concrete reinforcing bars, here being installed. Bethlehem supplied much of this steel.

Owner: Elizabeth River Tunnel District of Norfolk;

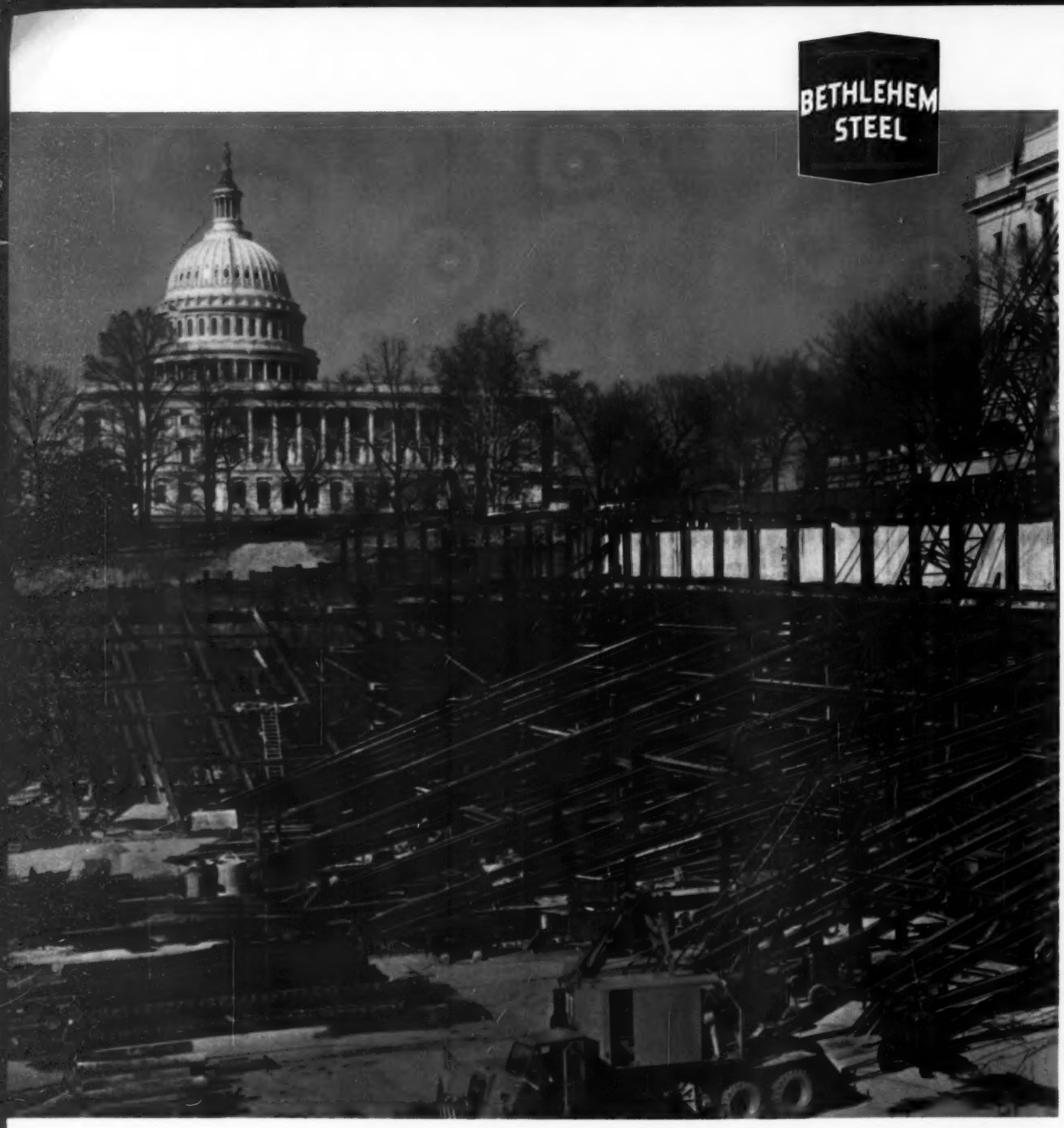
Designer and supervisor of construction: Parsons, Brinckerhoff, Quade and Douglas;

Prime contractor: Diamond Construction Co.;

Fabricator: Wiley Manufacturing Co., subsidiary of Republic Industrial Corp.

BETHLEHEM STEEL

BETHLEHEM STEEL



New offices for the House of Representatives

Builder: McCloskey & Co.;
Steel fabricator and erector: Bethlehem Steel.

Steel supplied by Bethlehem: H-piles, reinforcing bars, fabrication and erection of structural steel.

Excavation for the Additional House Office Building covers five city blocks. It provides for a basement, sub-basement, and three garages below ground level. A huge drainage system will contain the historic Tiber Creek that once ran through the Capitol grounds. Shown here is the Bethlehem steel piling erected as reinforcement for the excavation walls. Over 14,000 tons of Bethlehem steel reinforcing bars were used. Bethlehem also fabricated and erected 23,000 tons of structural steel for the office building which contains 33,600,000 cu ft of space as compared to 7,600,000 in the Capitol building.

Steel

for Strength . . . Economy . . . Versatility

Circular stadium takes shape in Washington

Steel supplied by Bethlehem: fabrication and erection of structural steel, reinforcing bars, pipe, sheets, fasteners, H-piles, Slabform (formed sheet).

A circular, double-decked stadium, new home of both the Senators and Redskins, will seat 45,000 fans during baseball season. Sections of the lower stands are movable, allowing for an increase to 50,000 fans for football. No supporting columns obstruct vision because seats and roof are supported by 66 huge steel cantilever arms, fabricated from Bethlehem steel plate. The frames are laterally connected by a combination of box struts and wide-flange rafters. Bethlehem also supplied over 5,000 tons of concrete reinforcing bars, 5,990 tons of H-piles and 245 tons of steel pipe to the project. A total of 7,350 tons of steelwork was erected by Bethlehem.

Owner: District of Columbia Armory Board;

Architect and engineer: Dahl-Ewin-Osborn;

Builder: McCloskey & Co.

BETHLEHEM STEEL

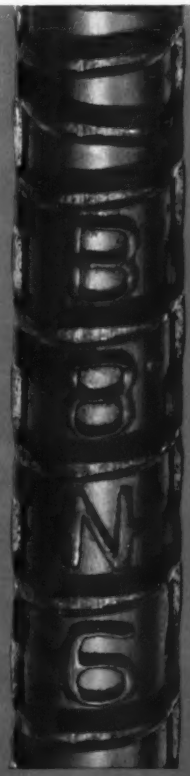
It's easy to identify Bethlehem high-strength reinforcing bars—

in the field or in your shop

ASTM A-15

Bethlehem bars are always branded in the same sequence:

- B means Bethlehem produced the bar
- This number is the bar size (always between the letters)
- -N- means the bar is made of domestic new-billet steel
- This number designates the grade of high-strength steel (7 for 75,000 psi min. yield and 6 for 60,000 psi min. yield)



ASTM A-432

ASTM A-431

STEEL CONSTRUCTION IN MOTION PICTURES

These Bethlehem motion pictures are available free of charge. All are 16 mm, in color, with sound track. Just fill in the coupon and mail to us at Bethlehem, Pa.

OPEN ROAD (Highway construction). Color, 32 minutes.
SKYLINES (Structural steel). Color, 29 minutes.
STEEL IN CONCRETE (Reinforcing bars). Color, 38 minutes.
FURY OF THE WINDS (Fabricated steel and the Atlantic hurricane). Color, 24 minutes.
MEN, STEEL AND EARTHQUAKES (Fabricated steel). Color, 28 minutes.
STEEL SPANS THE CHESAPEAKE (Bridge building). Color, 37 minutes.

PUBLICATIONS DEPARTMENT
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

I would like to arrange a showing of the following motion pictures:

Title — Date of showing

_____

_____

_____

Name_____

Address_____

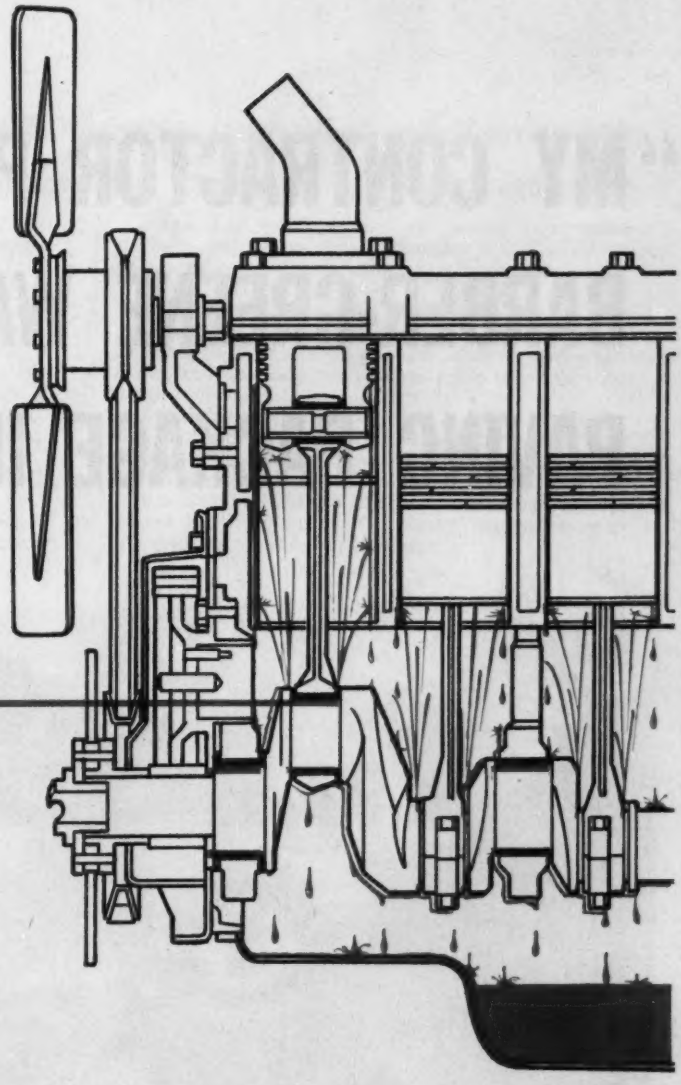
_____

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Why precision bearings are vital here



Engine bearings have *two* vital jobs. They provide a low-friction surface for journals to ride on. But equally important, they control the oil throw-off, due to the spinning action of the shaft, that lubricates and cools cylinder walls and other engine parts.

Exact tolerances are needed in engine bearings and shaft diameters to get the kind of precise "clearances" needed to control oil throw-off. *Too little clearance*—an error of less than .001″—may result in an overheated bearing and early bearing failure due to insufficient lubrication.

Too much oil clearance is equally harmful to proper engine performance. If oil clearance is changed from just .0015″ to .006″, the oil throw-off (shown above) increases 25 times. And even the best piston rings can control only about a 5 times normal amount of oil. The excess oil then slips past piston rings into the combustion chamber where it clogs piston rings and builds up combustion chamber deposits.

Federal-Mogul knows, as you probably do, the importance of oil clearances. That's why Fm bearings are manufactured to tolerances as close as ±.000125″—1/16 the thickness of a human hair. Why take a chance on anything less than precision engine bearings? You can be sure of a satisfied customer when you use the best. See your Federal-Mogul jobber.

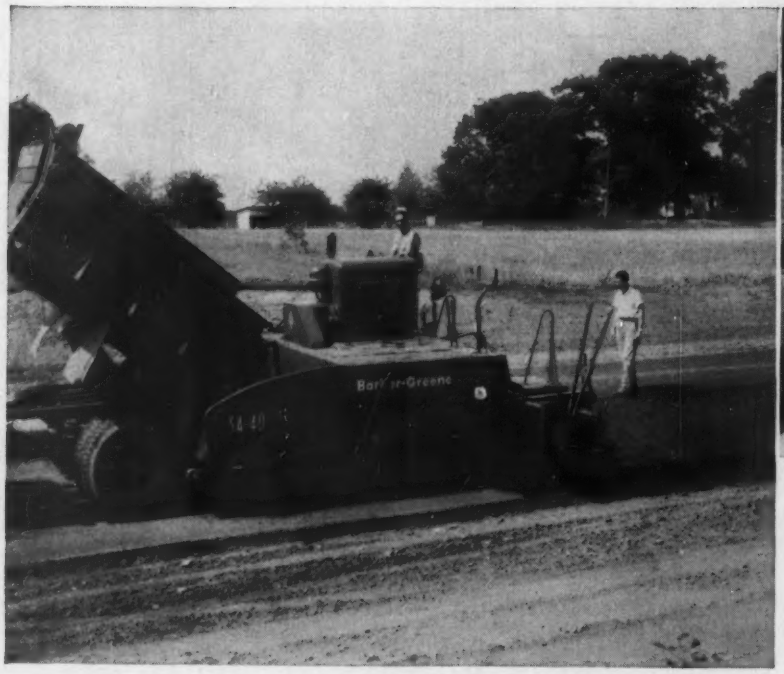
FEDERAL-MOGUL ENGINE BEARINGS

FEDERAL-MOGUL SERVICE

DIVISION OF FEDERAL-MOGUL-BOWER BEARINGS, INC. • DETROIT 13, MICHIGAN

Circle 37 on Reader Service Card

"MY CONTRACTOR POLL SHOWED BARBER-GREENE WAS THE BEST PAVING PACKAGE INVESTMENT"



SA-40 REPORT. Fast paving speed and ease of operation highlight foreman Bill White's comments on this new SA-40. White reports initial black base course (4" lift, 12' wide) was easily handled at 2000 tons per day.

MODEL 828 SELF-ERECTING STABILIZATION PLANT is one of four models in Barber-Greene line producing 200 to over 600 tph at lowest cost.

World's No. 1 Manufacturer of Asphalt Paving Equipment

Representatives in Principal Cities of the World

Barber-Greene BG

Main Office and Plant AURORA, ILLINOIS, U. S. A.
Other Plants: DeKalb, Milwaukee, Detroit, Canada, England, Brazil, Australia

CONVEYORS • LOADERS • DITCHERS • ASPHALT PAVING EQUIPMENT

• 836 •

Sherman Simpson, veteran Mt. Airy, N. C., contractor, tackles first asphalt paving jobs with 894 BatchOmatic and SA-40 Finisher after checkup on competitive equipment

Contractor Sherman Simpson, Mt. Airy, N. C., tells why he bought a Barber-Greene paving equipment package when he recently branched out into the asphalt paving field:

"In my 32 years association with contractors, the name Barber-Greene seemed to stand out among asphalt paving equipment manufacturers – but I wanted to be doubly sure. So, I polled some good contractors. Barber-Greene and two other makes were most recommended. I went further and checked owners of this type equipment and found Barber-Greene way out front. That's when I ordered my Barber-Greene 894 BatchOmatic plant and SA-40 asphalt finisher."

"I got another winner, too, in the distributor—Carolina Equipment Co. Past experience with them makes their people tops on my list," he adds.

When you need an asphalt paving equipment package, or just an asphalt finisher or stabilization plant, take your own contractor preference poll.

You'll get further proof why modern Barber-Greene BatchOmatic and Continuous asphalt plants are industry leaders for lower cost high capacity production, most accurate and automatic operation, lower maintenance, and the ultimate in portability when required.

You'll discover Barber-Greene finishers—the General Duty SA-40 and 879-B, the Heavy-Duty SA-60 and SB-60 models, and the Compact 873 have one common feature: lowest cost paving per ton.

You'll find all sizes of Barber-Greene stabilization plants preferred for high capacity, controlled mixing with minimum maintenance.

33% PRODUCTION BONUS. Simpson's 894 BatchOmatic is shown mixing HB black base for road resurfacing job at China Grove, N. C. Plant Foreman, J. D. Young reports: "The 894 is rated at 1,500 tons daily, but we are mixing up to 2,070 tons of black base in 12 hours, and that included two hours of waiting for trucks." Plant is equipped with DA:65-CA:65 dryer-pac, four-bin cold feeder and a Model PA-70 conveyor. Contractor Simpson says, "We'll set this plant up on permanent location soon. Then, I'll need another plant and you can bet it will be a Barber-Greene." Closeup of automatic controls are shown at upper left.

Circle 39 on Reader Service Card

Trends in the Machinery Market...

Price Index

	AUG. 1961	MONTH AGO	YEAR AGO	% CHANGE 1960-1961
All Types of Equipment	178.4	178.3*	176.7	+ 1.0
Cranes; Draglines, Shovels	173.7	173.4	173.6	+ 0.1
Shovel, ½ cu yd	173.1	173.1	167.9	+ 3.1
Shovel, ¾ cu yd	178.8	178.8	175.4	+ 1.9
Shovel, 1-1½ cu yd	191.0	191.0	189.3	+ 0.9
Shovel, 2-2½ cu yd	169.1	169.1	170.3	— 0.7
Shovel, 3-3½ cu yd	159.8	159.8	167.8	— 4.8
Shovel, 6 cu yd	201.2	197.9	197.9	+ 1.7
Crane, truck mounted	165.9	165.9	168.2	— 2.4
Crane, tractor mounted	135.1	135.1	135.1	0
Bucket, clam shell	162.9	162.9	162.9	0
Bucket, dragline	169.3	169.3	169.3	0
Scrapers and Graders	165.7	165.7	166.6	— 0.5
Scraper, 4 wheel, 8-10.5 cu yd	145.3	145.3	155.0	— 6.3
Scraper, 4 wheel, 12-15 cu yd	153.3	153.3	156.8	— 2.2
Scraper, 2 wheel, 15-19.5 cu yd (a)	126.2	126.2	126.2	0
Grader, heavy duty	174.1	174.1	174.1	0
Grader, light and medium	170.9	170.9	170.9	0
Tractors (non-farm, incl industrial)	195.3	195.2*	193.6	+ 0.9
Wheel type, off-highway (a)	127.6	127.6	129.2	— 1.3
Crawler type, 50-74 dph	207.5	205.3	203.5	+ 2.0
75-99 dph	204.8	204.8	204.3	+ 0.2
100-154 dph	200.7	200.7*	198.2	+ 1.3
155-200 dph	208.6	208.6	203.3	+ 2.6
Machinery, Tractor Mounted	177.9	177.9	176.2	+ 1.0
Dozer, cable controlled	164.8	164.8	164.8	0
Dozer, hydraulic controlled	201.4	201.4	201.9	— 0.3
Cable power control unit	148.8	148.8	152.9	— 2.7
Loader, tractor shovel	166.7	166.7	163.2	+ 2.1
Specialized Machinery	159.6	159.6	158.7	+ 0.1
Ditcher	153.8	153.8	153.8	0
Roller, tandem	228.5	228.5	226.4	+ 0.9
Roller, 3 wheel	178.7	178.7	178.7	0
Ripper and rooter	164.5	164.5	156.6	+ 5.0
Dewatering pump, 10 M gph	108.5	108.5	111.5	— 2.7
Dewatering pump, 90 M gph	156.1	156.1	151.5	+ 3.0
Portable Air Compressors	181.1	183.6	167.5	+ 8.1
Contractor's Air Tools	190.5	190.5	181.6	+ 4.9
Mixers, Pavers, Spreaders	183.8	181.6	181.8	+ 1.2
Mixer, portable, 11 cu ft	169.6	169.6	166.8	+ 1.7
Mixer, portable, 16 cu ft	175.8	175.8	172.7	+ 1.8
Mixer, truck, 6 cu yd	131.1	131.1	135.1	— 3.0
Mixer, paving, 34 cu ft	192.9	192.9	196.7	— 1.9
Concrete finisher & spreader	209.6	198.4	201.9	+ 3.8
Bituminous distributor	124.5	124.5	126.2	— 1.3
Bituminous spreader	179.4	179.4	179.4	0
Bituminous paver	170.9	168.6	165.6	+ 3.2
Off-Highway Trucks, Wagons (b)	102.3	102.3	102.5	— 0.2
Contractors off-highway truck (b)	102.0	102.0	102.0	0
Trailer dump wagon (b)	104.5	104.5	106.7	— 2.1

● (a) January, 1955 = 100 ● (b) January, 1958 = 100 *Revised
BLS Primary Market Price Indexes, U. S. Department of Labor, 1947-49 = 100

List Prices Firm Up, Orders, Contracts Drop

EQUIPMENT LIST PRICES, f.o.b. plant, continued relatively steady in August, and there were signs of a new firmness that was lacking early in the summer.

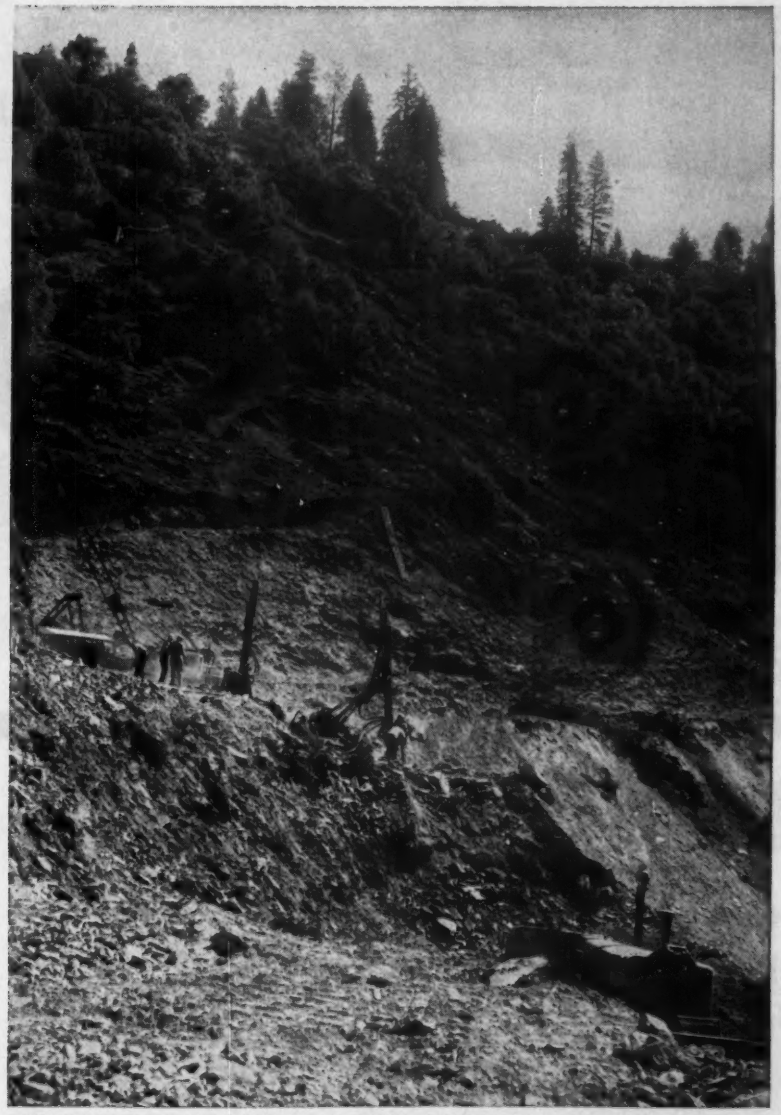
Between July 15 and August 15, the U.S. Bureau of Labor Statistics list price index edged up to 178.4, based on average prices in 1947-49 as 100.

Concrete finishers and spreaders had the biggest increase reported by BLS in August. The sub-index rose 5.6%. Items with list price boosts of better than 1% were power shovels with 3 to 3½-yd bucket capacity, paving breakers, bituminous pavers, and crawler tractors in the 50-74-drawbar-hp bracket. On the downside were list prices for smaller portable compressors, off 1.9%.

New orders for construction equipment placed by distributors backed down in July for the second month in a row, according to the McGraw-Hill Economics Dept. index (*chart above.*) This mirrors the seasonal pattern of June and July of 1959 and 1960. July orders were still higher than a year ago.

Because even larger gains were scored earlier in the year, the index for the first 7 months was 11% higher than 1960. The July index of 154, based on average monthly 1950 dollar volume as 100, compares with 160 for June (as revised).

The chart shows how the construction contract award curve moved down in August, following July's slight dip.Ths index was much steadier during the spring and summer of 1961 than in corresponding periods of recent years. It ranged from 177 to 196 during the five months, April through August. Last year's corresponding range was 176-225; 1959's was 146-193.



DOWN THIS CRAGGY 45% SLOPE goes the 1400′ long, 13′ diameter steel and cement penstock for the new Camino Powerhouse. The first phase of the job, a part of the Upper American River Project near Sacramento, California, was handled by Western Knapp Engineering Company and included the powerhouse excavation and the penstock "slot," anchors and immediate supports.

How low-cost air helped carve a 1400′ penstock in mountain rock

On this cliff-hanging drilling operation, a battery of Jaeger Roto Air Plus Compressors (900, 600 and 125 sizes) provided all the air power the contractor needed, and saved money every hour they worked.

THE JAEGER "900" AND TWO "600s" delivered full rated capacity at a fuel- and engine-saving 1700 rpm. That's 100 rpm (48,000 revolutions per 8-hour day) slower than competitive compressors that use the exact same GM 6-110 and 6-71 diesels. Naturally, diesel fuel goes further in a Jaeger (the compressors averaged over 500 cu. ft. per pound of fuel) and the engine lasts longer. It works less. For the same reason, compressor life is longer — up to 10,000 hours without a vane replacement is not unusual.

THE BATTERY OF JAEGER "125s" powered heavy 55 lb. sinkers with comparable efficiency, also producing more than 500 cu. ft. of air per pound of fuel at an easy 1750 rpm.

Full air pressure at slow engine speeds is one of the quality-plus characteristics of Jaeger rotaries — 75 to 900 cfm. Ask your Jaeger distributor for all the facts and figures, or write for our new compressor catalog.

JAEGER

ROTO AIR PLUS

A "MOUNTAIN" OF AIR POWER, TOO: In addition to the Jaeger 900 and 600 Roto Air Plus Compressors shown here, another 600 on top of the slope plus several Jaeger 125s were used for hand drilling. The "900" powered two Thor TR-5 Trac Drills.

The JAEGER MACHINE CO., 800 Dublin Avenue, Columbus 16, Ohio

Jaeger Machine Company of Canada, Ltd., St. Thomas, Ontario

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100,000-MILE WARRANTY FOR SUPER DUTY V-8's

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NEW '62 FORD TRUCKS

Get full-time economy that only starts with Ford's low price!

Meet the trucks that make saving money a full-time business—new Ford Trucks for '62!

In a selection of over 600 models there's a truck that's right for your job, whatever your job . . . trucks that you can buy and operate at lower cost . . . trucks that can save you money mile after mile, load after load, year after year!

They save on price. They save on gas and oil. They save on tires and on maintenance—wherever there's a way to save! The full record of Ford economy, covering three years of independent tests, is detailed in Ford's Certified Economy Reports. See your Ford Dealer now. Check out the facts, work out a deal, and drive out a truck that saves money . . . full time!

FORD TRUCKS COST LESS

SAVE NOW...SAVE FROM NOW ON!

ECONOMICAL HEAVY DUTY V-8's with 292-, 302- and 332-cu. in. displacement give you tailored-to-the-job economy at much lower prices than you would expect in trucks with engines of this size. Stress-relieved cylinder heads, aluminum alloy pistons and sodium-cooled exhaust valves are but a few of the heavy-duty features you get with these engines.

EXCLUSIVE 100,000-MILE WARRANTY on 401-, 477- and 534-cu. in. Super Duty V-8's is the most liberal in the industry. Each major engine part (including block, heads, crankshaft, valves, pistons, rings), when engine is used in normal service, is warranted by your dealer against defects in material or workmanship. *The warranty covers full cost of replacement parts* for 100,000 miles or 24 months (or 3,000 hours if used as a power source for other than propelling the vehicle), whichever comes first . . . *full labor costs* for 50,000 miles, 12 months or 1,500 hours, sliding percentage scale thereafter.

PROVEN 262-CU. IN. BIG SIX FOR FORD MEDIUMS includes more heavy-duty engine features than any other Six of its size. Never before such long-term durability, reliability, and economy at so low a price.

NEW STYLESIDE BODY FOR 4 X 4 PICKUPS—Ford's rugged 4-wheel drive models are now available with a cab-wide Styleside box that provides over 70 cubic feet of loadspace. Flareside body with running boards is also available.

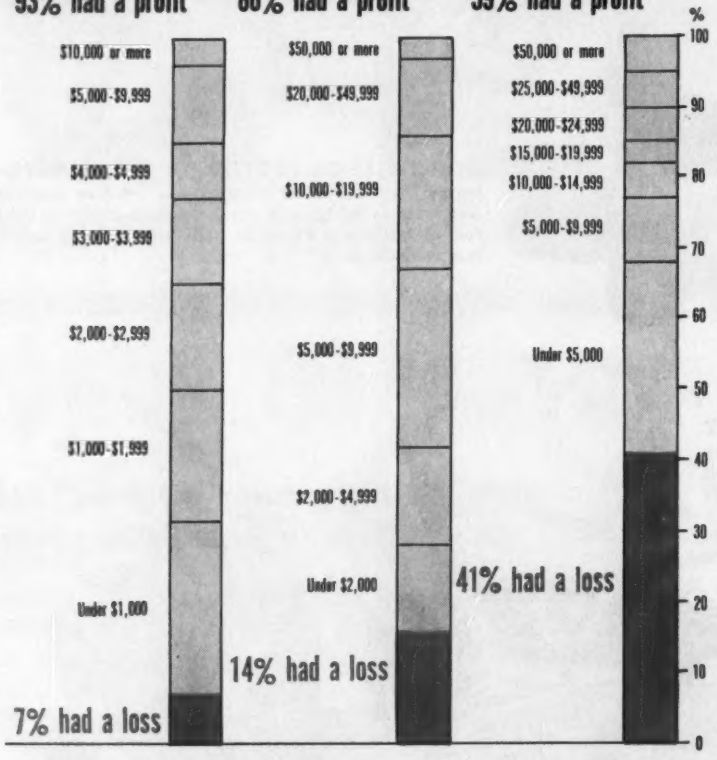
HEAVY-DUTY CAB, RADIATOR AND SHEET METAL—All Ford Tandems utilize heavy gauge steel, sturdy reinforcements and independent mounting systems to separate radiator, fenders and cab. This stronger construction, with each component individually frame-supported, gives long life, reduces maintenance expense and cuts downtime.

PRODUCTS OF Ford MOTOR COMPANY

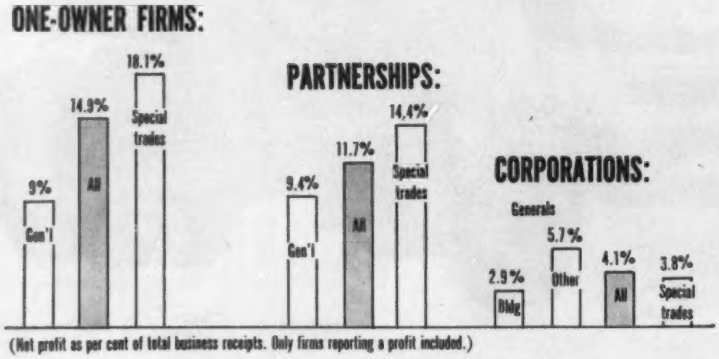
Circle 43 on Reader Service Card

One-Owner Firms Pay Off

More of them make a profit...



...and their profit margins are higher



(Net profit as per cent of total business receipts. Only firms reporting a profit included.)

NEW TAX RETURN DATA just released by the government indicates that the bigger you are —or try to be—the tougher you'll find it is to stay out of the red.

Good management and close job control determine profitability in this industry. Mere bigness, or great volumes of new business, do not insure a contractor a profit, the figures say.

If you are the sole proprietor of your own contracting firm, your chances of showing a profit are much greater than if your firm is a partnership or a corporate enterprise. And the chances are that your profit margins are fatter than your corporate competitor.

Partnerships in general contracting show even a better edge on the profit side of the ledger. If your firm is a partnership, your chances of having a profitable year are far greater than if your firm is incorporated.

The type of work you do also has a bearing on your profits or losses. General contractors' profit margins are much less than those of special trade contractors. And for corporate enterprises, statistics show that general contractors doing "other than building" have much healthier profit margins than those that specialize in building.

But regardless of the type of work you handle, your chances for profit are greater if you own your firm outright.

These findings, which are detailed in the chart at the left and the table on the right, are the results of a *Construction Methods'* analysis of new income tax return data compiled by the Bureau of Internal Revenue.

The BIR statistics show the profits and losses, by type of organization, for accounting periods from August 1957 through July 1959. (Aug. '58-July '59 only in chart)

continued on page 49

THE PROFIT AND LOSS TREND

By type of organization and type of contracting

THESE CORPORATIONS MADE A PROFIT

Type of Contracting	Number of Companies 1958-59	Number of Companies 1957-58	Chg %	Business Receipts 1958-59 (Millions of $)	Business Receipts 1957-58 (Millions of $)	Chg %	Gross Profit 1958-59 (Millions of $)	Gross Profit 1957-58 (Millions of $)	Chg %	Net Profit 1958-59 (Millions of $)	Net Profit 1957-58 (Millions of $)	Chg %
All contractors	35,223	31,961	+10	23,019	22,543	+ 2	3,892	3,734	+ 4	938	960	— 2
General contractors	15,863	14,085	+13	14,873	14,870	0	2,169	n.a.	...	627	642	— 2
Building	9,814	9,090	+ 8	7,835	7,864	— 0.4	862	n.a.	...	227	236	— 4
Other than building	6,049	4,995	+21	7,038	7,006	+ 0.5	1,307	n.a.	...	400	406	— 1
Special trade contractors	18,668	17,200	+ 9	7,970	7,523	+ 6	1,688	n.a.	...	300	310	— 3
Unclassified contractors	692	676	+ 2	176	151	+17	36	n.a.	...	11	8	+38

THESE CORPORATIONS SUFFERED A LOSS

Type of Contracting	Number of Companies 1958-59	Number of Companies 1957-58	Chg %	Business Receipts 1958-59 (Millions of $)	Business Receipts 1957-58 (Millions of $)	Chg %	Gross Profit 1958-59 (Millions of $)	Gross Profit 1957-58 (Millions of $)	Chg %	Net Loss 1958-59 (Millions of $)	Net Loss 1957-58 (Millions of $)	Chg %
All contractors	24,624	21,615	+14	5,129	4,132	+24	681	531	+28	279	220	+28
General contractors	11,517	10,237	+13	3,188	2,540	+26	300	n.a.	...	168	146	+15
Building	7,732	7,186	+ 8	1,708	1,420	+20	118	n.a.	...	87	72	+21
Other than building	3,785	3,051	+24	1,480	1,120	+32	182	n.a.	...	81	74	+ 9
Special trade contractors	11,866	10,477	+13	1,877	1,542	+22	372	n.a.	...	109	71	+54
Unclassified contractors	1,241	901	+38	65	49	+35	9	6	+50	3	4	-25

THESE PARTNERSHIPS MADE A PROFIT

Type of Contracting	Number of Firms 1958-59	Number of Firms 1957-58	Chg %	Business Receipts 1958-59 (Millions of $)	Business Receipts 1957-58 (Millions of $)	Chg %	Gross Profit 1958-59 (Millions of $)	Gross Profit 1957-58 (Millions of $)	Chg %	Net Profit 1958-59 (Millions of $)	Net Profit 1957-58 (Millions of $)	Chg %
All contractors	52,115	58,273	—11	6,360	6,558	— 3	1,725	2,003	—14	741	798	— 7
General contractors	15,625	16,980	— 8	3,652	3,613	+ 1	789	866	— 9	343	322	+ 7
Special trade contractors	33,189	39,540	—16	2,585	2,866	—10	886	1,109	—20	372	460	—19
Unclassified contractors	3,301	1,753	+88	123	79	+56	50	28	+79	26	16	+63

THESE PARTNERSHIPS SUFFERED A LOSS

Type of Contracting	Number of Firms 1958-59	Number of Firms 1957-58	Chg %	Business Receipts 1958-59 (Millions of $)	Business Receipts 1957-58 (Millions of $)	Chg %	Gross Profit 1958-59 (Millions of $)	Gross Profit 1957-58 (Millions of $)	Chg %	Net Loss 1958-59 (Millions of $)	Net Loss 1957-58 (Millions of $)	Chg %
All contractors	8,830	7,672	+15	978	977	0	136	147	— 7	62	74	—16
General contractors	3,302	3,789	—13	722	805	—10	65	86	—24	44	59	—25
Special trade contractors	4,468	3,569	+25	221	156	+42	56	57	— 2	14	11	+27
Unclassified contractors	1,060	314	+237	35	17	+106	15	3	+400	3	4	-25

THESE ONE-MAN OWNERSHIPS* MADE A PROFIT

*Sole Proprietorships

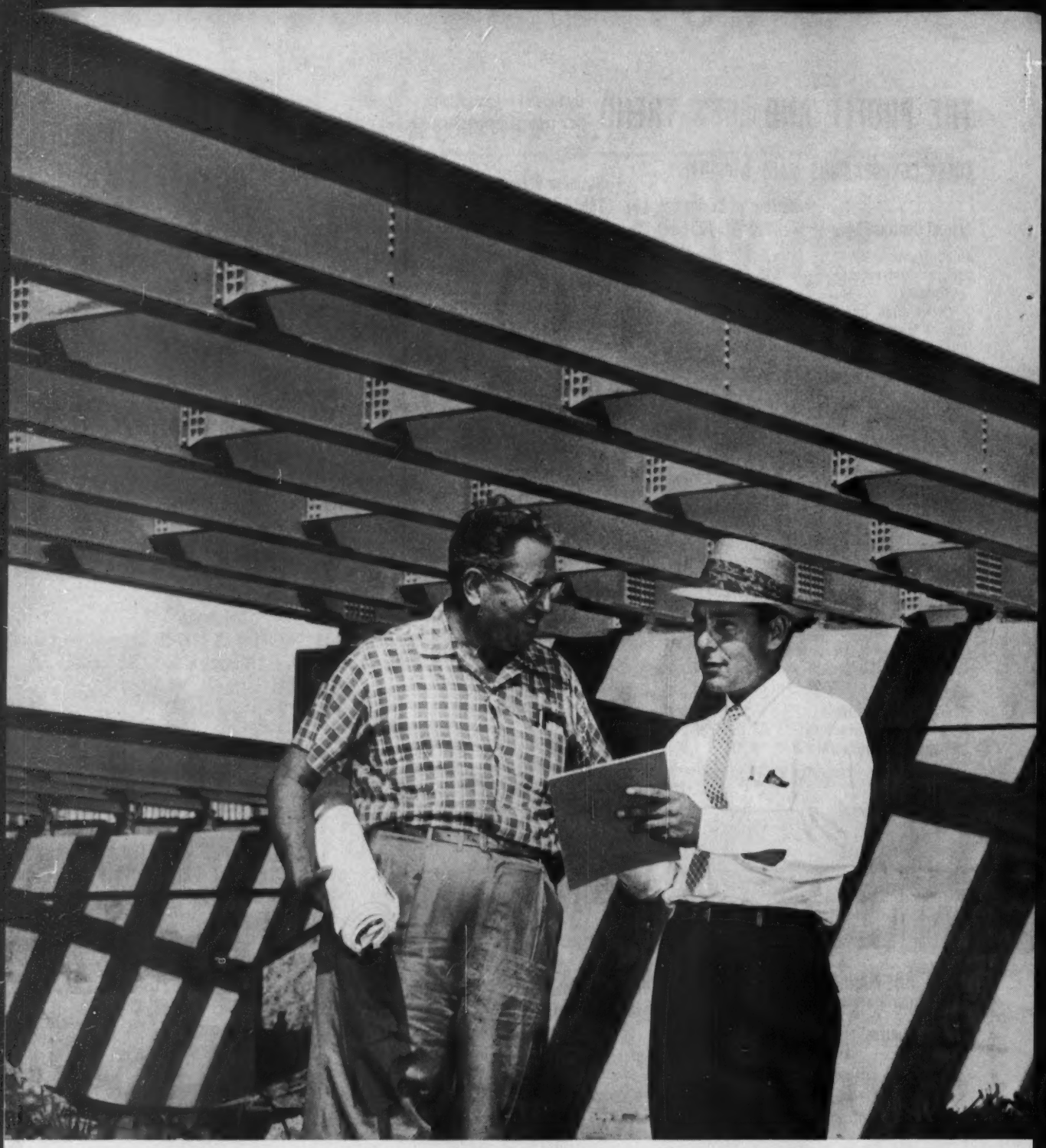
Type of Contracting	Number of Firms 1958-59	Number of Firms 1957-58	Chg %	Business Receipts 1958-59 (Millions of $)	Business Receipts 1957-58 (Millions of $)	Chg %	Gross Profit 1958-59 (Millions of $)	Gross Profit 1957-58 (Millions of $)	Chg %	Net Profit 1958-59 (Millions of $)	Net Profit 1957-58 (Millions of $)	Chg %
All contractors	561,979	557,398	+ 1	12,329	12,657	— 3	not available			1,839	1,873	— 2
General contractors	68,221	81,152	—16	4,211	5,017	—16				379	423	—10
Special trade contractors	464,769	458,161	+ 1	7,514	7,306	+ 3				1,362	1,387	— 2
Unclassified contractors	28,989	18,085	+60	605	334	+81				98	63	+56

THESE ONE-MAN OWNERSHIPS* SUFFERED A LOSS

*Sole Proprietorships

Type of Contracting	Number of Firms 1958-59	Number of Firms 1957-58	Chg %	Business Receipts 1958-59 (Millions of $)	Business Receipts 1957-58 (Millions of $)	Chg %	Gross Profit 1958-59 (Millions of $)	Gross Profit 1957-58 (Millions of $)	Chg %	Net Loss 1958-59 (Millions of $)	Net Loss 1957-58 (Millions of $)	Chg %
All contractors	42,931	41,020	+ 5	1,233	932	+32	not available			148	113	+31
General contractors	7,814	11,032	—29	238	418	—43				94	63	+49
Special trade contractors	31,878	28,016	+14	702	460	+53				51	45	+13
Unclassified contractors	3,239	1,972	+64	293	54	+443				3	5	-40

From "Statistics of Income — U.S. Business Tax Returns" compiled by the Bureau of Internal Revenue, U.S. Treasury Department, from income tax returns and schedules filed for accounting periods ending sometime during each 12 months ending July 31, 1958 and 1959. The 1957-58 statistics are most relevant to calendar 1957 operations, the 1958-59 statistics to 1958 operations. However, while these calendar years were most common for corporation returns, 56% of the corporate returns received in 1957-58 were for accounting periods other than calendar 1957.



An important Rieth-Riley project is the construction near Indianapolis of five bridges at the intersection of U.S. 52, Interstate 465 and Bypass 100. Here Miles Shookman checks service and delivery requirements with bridge superintendent H. P. Kunkler.

BY MILES SHOOKMAN

About the Author. Operating out of Indianapolis, Miles Shookman has the job of providing specialized service to construction contractors in his territory. A graduate of Indiana University, Miles is well qualified for this important assignment. He has been doing this work for much of the 15 years he's been with the company, and also attended the Company's Sales Engineering School.

★ ★ ★

Rieth-Riley Construction Company, Inc., is a large, highly diversified contracting firm with headquarters in Goshen, Indiana. As "Contractor Representative" for American Oil Company, I work closely with Rieth-Riley to provide the specialized service needed for construction operations. This means visiting widely scattered projects to make sure the company gets the right product in the right place at the right time—*always.*

Specializing in highway, bridge and street projects, Rieth-Riley owns and operates a large number of complicated and expensive pieces of equipment. Years of experience has taught the importance of uniform maintenance practices and consolidated fuels and lubrication programs. That's why Rieth-Riley depends on American Oil.

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Rieth-Riley Construction Company, Inc., Depends on These AMERICAN Products

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- AMERICAN® Regular Gasoline
- AMERICAN® S-1 Motor Oil
- AMERICAN® S-3 Motor Oil
- AMERICAN® Multi-Purpose Gear Lubricant
- AMOCO® Lithium Multi-Purpose Grease
- Asphalt

*Not available in Texas

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AMERICAN

AMERICAN OIL COMPANY
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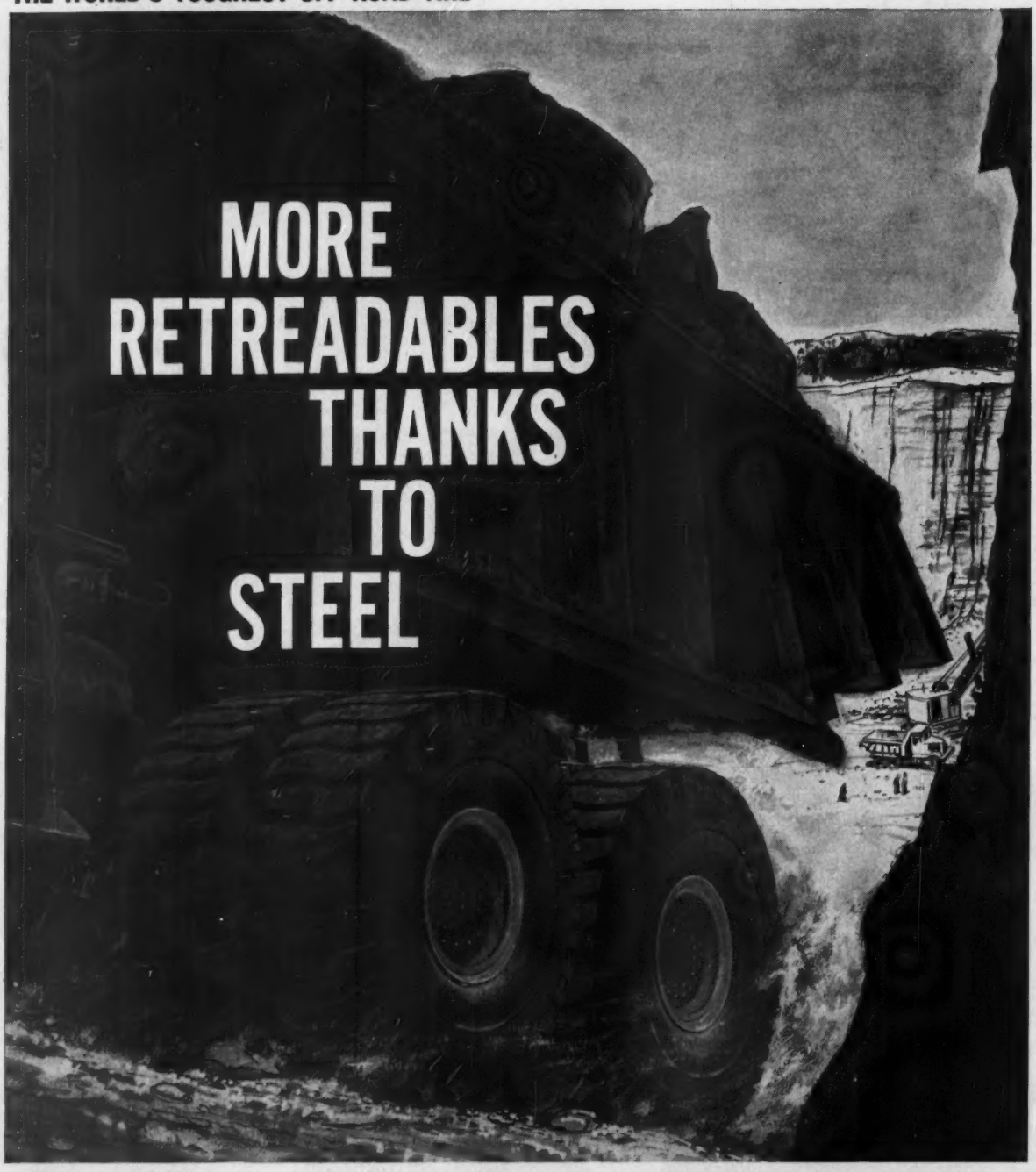
THE WORLD'S TOUGHEST OFF-ROAD TIRE



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CONSTRUCTION BUSINESS . .

continued from page 44

Most of those sole proprietorships that showed a profit reported that it amounted to less than $1,000. Most partnerships averaged between $5,000 and $9,999, and most corporations who finished in the black made less than $5,000.

Relatively few one-man outfits showed more than $10,000 in annual profits. Among partnerships and corporations, very few made more than $50,000 a year. The BIR data covers primarily the calendar 1958 accounting period. This was a good year for the industry on the whole, except for industrial building contractors, who were in slump.

The only other Internal Revenue data that compares with the new figures covers the 1957 calendar year. The new data shows only slight variations from the original material.

The figures in the table and chart are estimates based on government sampling methods that are described in "Statistics of Income—1958-59, US. Business Tax Returns," a publication of the Internal Revenue Service.

SOME BIG CONTRACT AWARDS OF THE MONTH

J. W. Bateson Construction Co., Dallas, Tex. Capehart Housing, Ft. Ord, Calif. Corps of Engineers, San Francisco. $7,812,882.

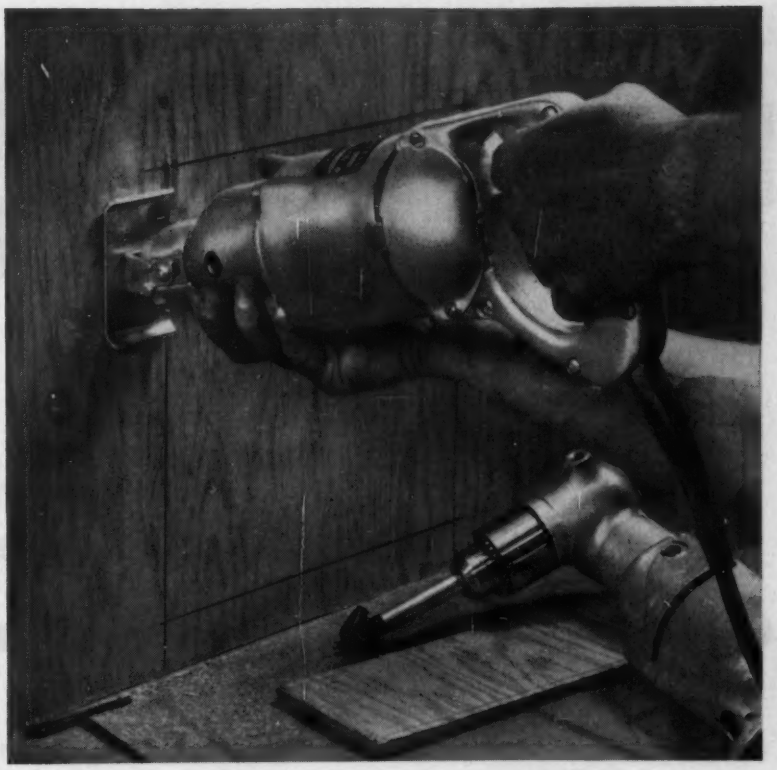
Gibbon and Reed, Salt Lake City, Utah. Interstate Highway 15, Salt Lake County. Utah State Road Commission. $3,589,723.

Martin K. Eby, Wichita, Kan. Low bidder on building for Denver United National Bank, Denver, Colo. Estimated Cost: $4.5 million.

Morrison-Knudsen Co., New York, and **Keller Construction Co.**, New Orleans. Low bid on substructure for Sunshine Toll Bridge on Mississippi River at Donaldsville, La. Ascension-St. James Bridge & Ferry Authority, Donaldsville. $7,483,000.

Baltimore Contractors, Inc., Baltimore, Md. Civic Center. City of Baltimore. $6,744,000.

continued on page 51

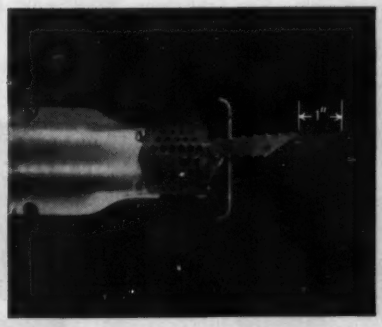


CUT IT CLOSER

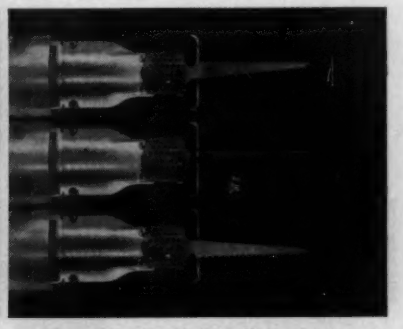
with Black & Decker Sabre Saw's off-set blade design

Cutting flush-to or around corners . . . B&D Sabre Saw gets closer with its unique off-set blade design. Three-way blade spindle turns 90° and 180° to cut out pockets, quicker . . . cut into corners, easier. Exclusive long-stroke action to go clean through everything, safeguard blade guide for up-front control, rock 'n' lock shoe design for steadiest handling . . . all assure solid sawing results.

Black & Decker
CUTS MAN-HOURS TO MINUTES



Long-stroke action (1" blade stroke) for faster work and longer blade life.



Adjustable blade spindle turns to cut right or left, backward or forward.

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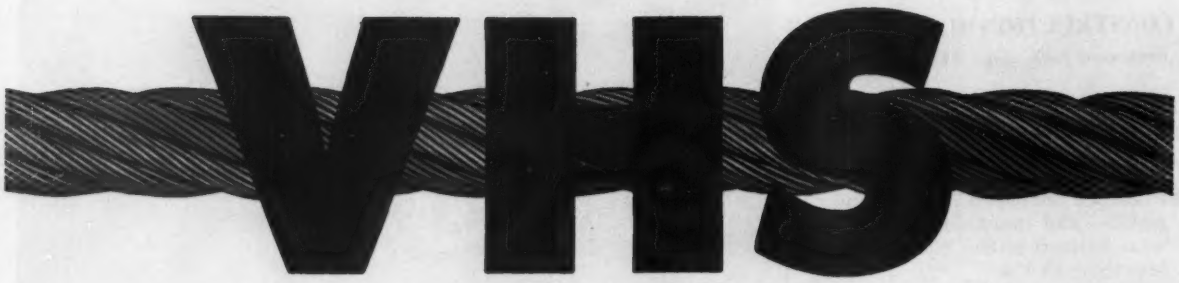

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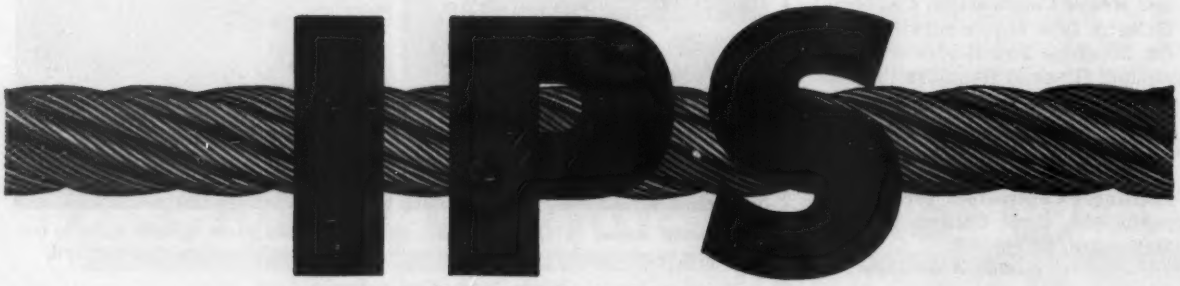

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CONTRACTS AWARDED . . .

continued from page 49

Rust Engineering Co., Pittsburg, Pa. Ingot mold plant, Trenton, Mich. Vulcan Mold & Iron Co., Latrobe, Pa. Estimated cost: $7.5 million.

Slattery Contracting Corp., Maspeth, N.Y. Roadways and utilities, Queens Boro, Flushing, N.Y. New York Commissioner Parks. $4,624,321.

A. C. Samford, Inc., Albany, Ga. Capehart housing, Ft. Rucker, Ala. Corps of Engineers, Mobile, Ala. $7,749,200.

Diesel Construction Co., New York. Office building, New York, N.Y. Erwin S. Wolfson, New York. $30,000,000.

L. B. Berke-Moore Co., Boston, Mass. Low bid for road widening and bridges, Rt 128, Lexington, Mass. Commonwealth of Massachusetts, Department of Public Works, Boston. $3,530,931.

American Dredging Co., Philadelphia, Pa. Low bidder for dredging section between Burlington-Bristol Bridge and Pennsylvania Turnpike Bridge. Corps of Engineers, Philadelphia. $5,821,200.

Robert W. Anderson Co., Chicago. Section on South Route Expressway. Illinoiis State Division of Highways, Springfield. $4,191,637.

Tolboe & Harlin, Salt Lake City, Utah. Student housing. Brigham Young University, Provo, Utah. $4,822,897.

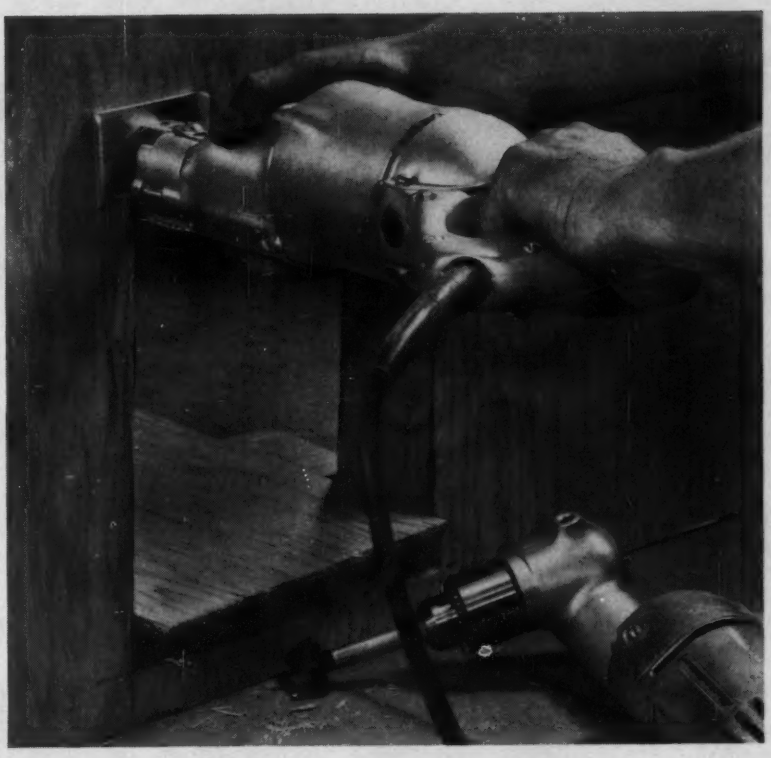
Alamo Lumber Co., San Antonio, Tex. Shopping Center at Harlingen, Tex. Sun Valley Shopping Center, Angleton, Tex. $4,174,525.

N. G. Petry Construction Co., Denver, Colo. Office building. Capitol Life Insurance Co., Denver. Estimated cost: $4 million.

Peter Kiewit Sons Co., Arcadia, Calif. Low bid for road work on San Diego Freeway, Hawthorne, Calif. California State Division of Highways, Los Angeles. $4,315,000.

Gust K. Newberg Construction Chicago, Ill. Parking lot, O'Hare Airport, Park Ridge. City of Chicago. $4,983,192.

continued on page 53



CUT IT ALL

. . . with Black & Decker Sabre Saw's exclusive long-stroke action

Wood, metal, plastic or plaster . . . the B&D Sabre Saw cuts clean through everything. Faster, too, with its exclusive long-stroke action. Unique rock 'n' lock shoe design makes one-handed sawing on any surface a cinch. Safeguard blade guide gives you up-front control, adjustable blade spindle makes perfect pocket cuts. Start to finish is shorter than ever before with the B&D Sabre Saw.

Black & Decker
CUTS MAN-HOURS TO MINUTES

New, Sturdy, B&D Sabre Saw Kit makes taking the tool to the job easier, tool-protection no problem. Also contains 5 new B&D Blades for all-purpose use.
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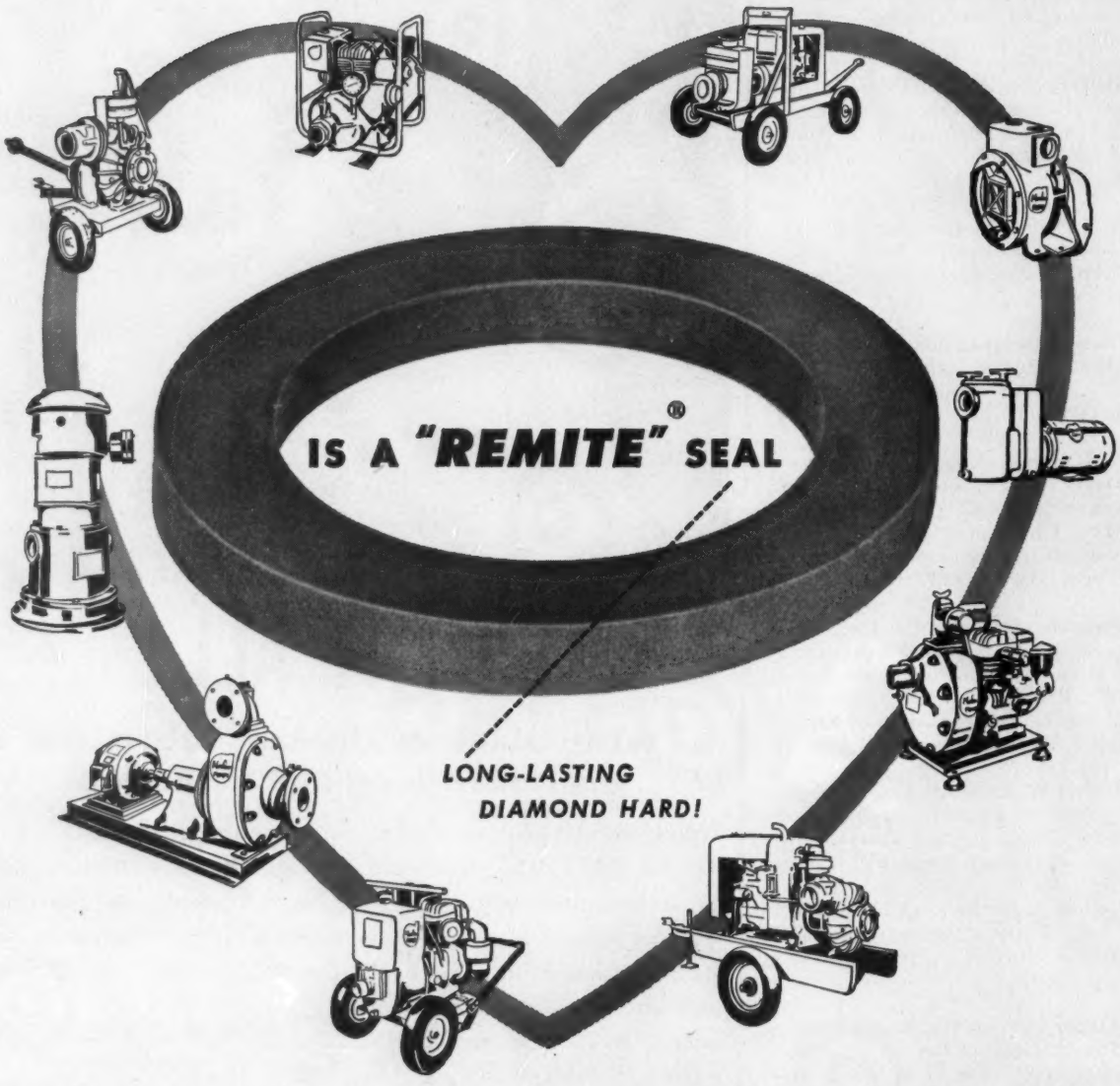
THE *HEART* OF EVERY DEPENDABLE *MARLOW* PUMP...



Yes, Marlow's mechanical shaft seal is designed to keep the liquid where it belongs—inside the pump casing and not in the bearings or on the floor! A unique material, called "Remite," that was developed in the Research Laboratories of Bell & Gossett, helps make this possible. Remite is a material that is almost as hard as a diamond and is compatible with almost every liquid. Both of these properties help to make Marlow's mechanical shaft seal virtually leakproof and one of the finest available anywhere in the world.

This premium seal is standard equipment on all of Marlow's self-priming centrifugal and end-suction centrifugal pumps. This is just one of many reasons why Marlows offer a dependable and reliable solution to every pumping problem. Because it is self-lubricating, routine maintenance is almost completely eliminated.

Today, research by Marlow and Bell & Gossett is constantly striving to make a good product even better to serve you with ever increased efficiency.

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Marlow PUMPS®

MARLOW PUMPS

DIVISION OF BELL & GOSSETT COMPANY

MIDLAND PARK, NEW JERSEY

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CONTRACTS AWARDED...

continued from page 51

Triangle Construction Co., Tallahassee, Fla. Synthetic detergent manufacturing plant, Augusta, Ga. Proctor & Gamble Co., Cincinnati, Ohio. Estimated cost: $4 million.

H. L. Coble, Greensboro, N. C. Low bid on Capehart housing in Public Works Office, Charleston, Mayport, Fla. Sixth Naval District S. C. $7,787,500.

Ralph Myers Contracting Corp., Salem, Ind. East Kentucky Turnpike. Commonwealth of Kentucky Department of Highways, Frankfort.

Ball & Simpson, Berkeley, Calif. Freeway on Rt 101, Humboldt County, Calif. State Department of Public Works, Sacramento. $5,547,943.

Peter Kiewit Sons Co., San Francisco, Calif. Trestle to replace easterly portion of San Mateo-Hayward bridge. California Department of Public Works, San Francisco. $13,278,590.

Frank Messer & Sons, Inc., Cincinnati, Ohio. Low bid on high rise apartments, Cincinnati. Cincinnati Metropolitan Housing Authority. $4,227,800.

Franklin Contracting Co., Little Falls, N. J. Interchange connecting Interstate Rt 80 with N J Rt 17, Bergen County. New Jersey State Highway Department, Trenton. $4,678,771.

Kaiser and Raymond International, Oakland, Calif. Low bid on Loon Lake earthfill dam and dike, Upper American River Project, El Dorado County. Sacramento Municipal Utility District, Sacramento. $7,425,499.

Poirier & McLane, New York, N.Y. Low bid on six bridges on Rt 80 in Bergen County, N.J. New Jersey State Highway Department, Trenton. $3,076,403.

Stolte, Inc. and Morrison-Knudsen Co., Inc., Oakland, Calif. Eight-lane freeway on MacArthur Freeway, Oakland, Alameda County. California State Div. of Highways, Sacramento. $6,997,406.

continued on page 55

DRILL IT RIGHT

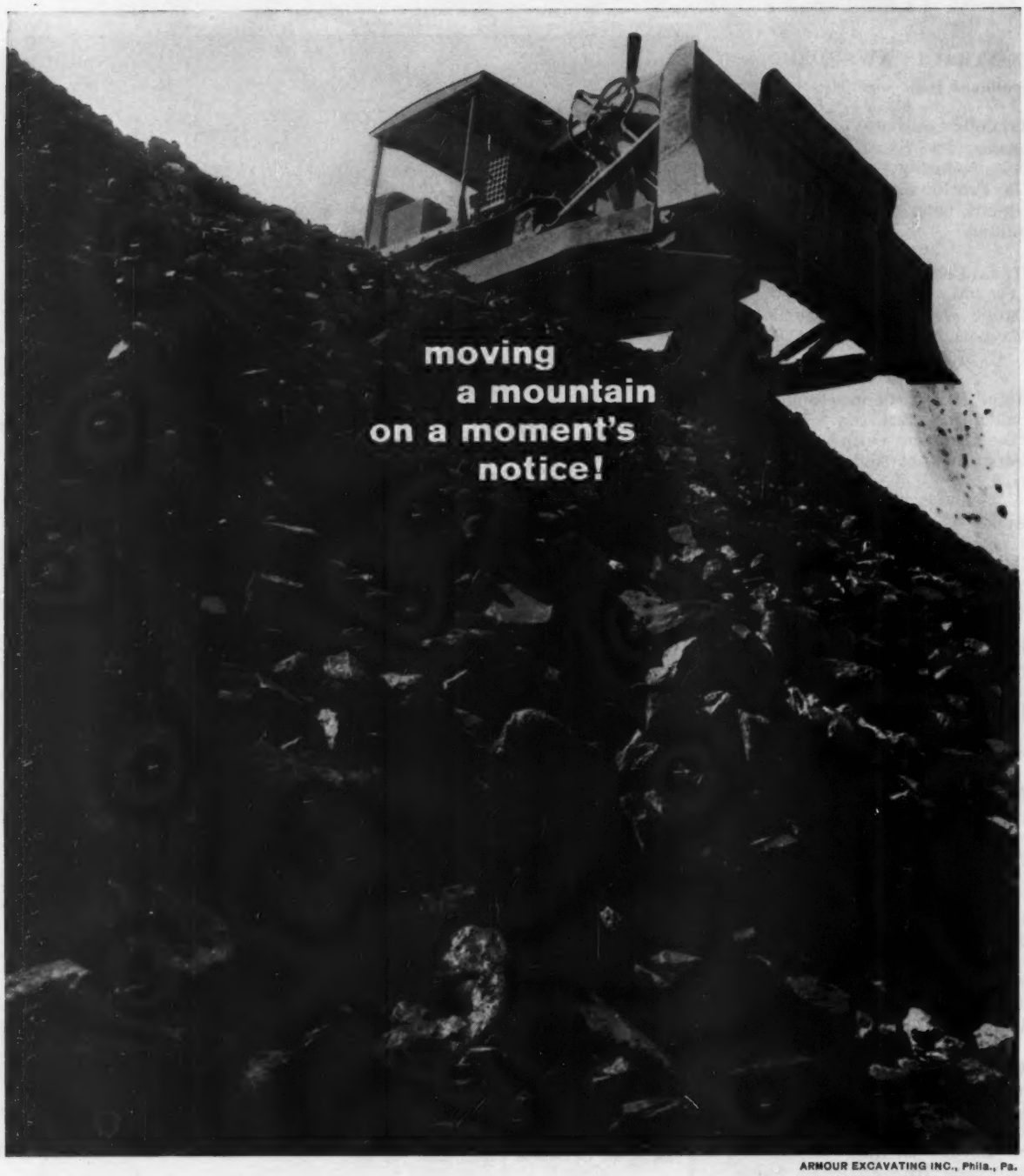
. . . with the Black & Decker Right Angle Drill's reversible head

Give your construction and maintenance jobs the right twist . . . with the B&D Right Angle Drill's reversible head for ⅜" to 1⅛" capacities in wood. One end gives you slower speed, higher torque . . . the other, higher speed with less torque. Both get around corners, in between pipes and joists with equal ease. You'll find the B&D Right Angle Drill the top tool for installing pipe or BX and conduit. Cuts user-fatigue with easier handling, quick operation.

Black & Decker
CUTS MAN-HOURS TO MINUTES

Husky B&D Right Angle Drill Kit makes this handy tool handier. Perfect for safe keeping. Contains hex socket wrench, gear chuck, reversible handle and 3-wire cable.

Circle 53 on Reader Service Card



ARMOUR EXCAVATING INC., Phila., Pa.

Needless to say, moving a Brazilian mountain around the Philadelphia area is no easy task. A few minutes after a hurry-up phone call from a large steel company that had a change of plans, the Armour Excavating Company was on the job. It had been contracted to stockpile 30,000 tons of Brazilian iron ore in the Philadelphia area. The call came during the night and the job was finished by noon the next day. That's the kind of fast-trigger service provided by Armour. And, it's the kind of service Armour requires . . . and gets from Cities Service.

Protecting all of the Armour equipment are Cities Service products such as C-300 oil and Trojan H multi-purpose grease.

If you have to produce service "on a moment's notice," you deserve the same kind of service . . . and you get it from Cities Service . . . plus top quality products. Why not call your nearest Cities Service Office . . . or write Cities Service Oil Company, 60 Wall Street, New York 5, N. Y.

CITIES SERVICE

Out Front in Quality . . . Out Front in Service, too!

Circle 54 on Reader Service Card

CONTRACTS AWARDED . . .

continued from page 53

HRH Construction Corp., New York, N. Y. Five-story headquarters building in Manhattan. American Red Cross, New York Chapter. Estimated cost: $5 million.

Ten-Eyck-Shaw, Inc., Dallas, Tex. Three 12-story office buildings, Dallas. Trammel Crow and Industrial Properties, Dallas. Estimated cost: $4,700,000.

HRH Corp., New York, N. Y. Four 32-story apartments over approaches to George Washington Bridge, New York. Washbridge Housing Corp., Inc., New York. $19,620,000.

Blaw-Knox Co., Pittsburgh, Pa. Plant to produce polyvinyl chloride at Bulington, N. J. Cary Chemicals, Inc., East Brunswick, N.J. Estimated cost: $4 million.

Diesel Construction Co., New York, N.Y. 30-story hotel in Manhattan. Loew's Inc., New York. Estimated cost: $25 million.

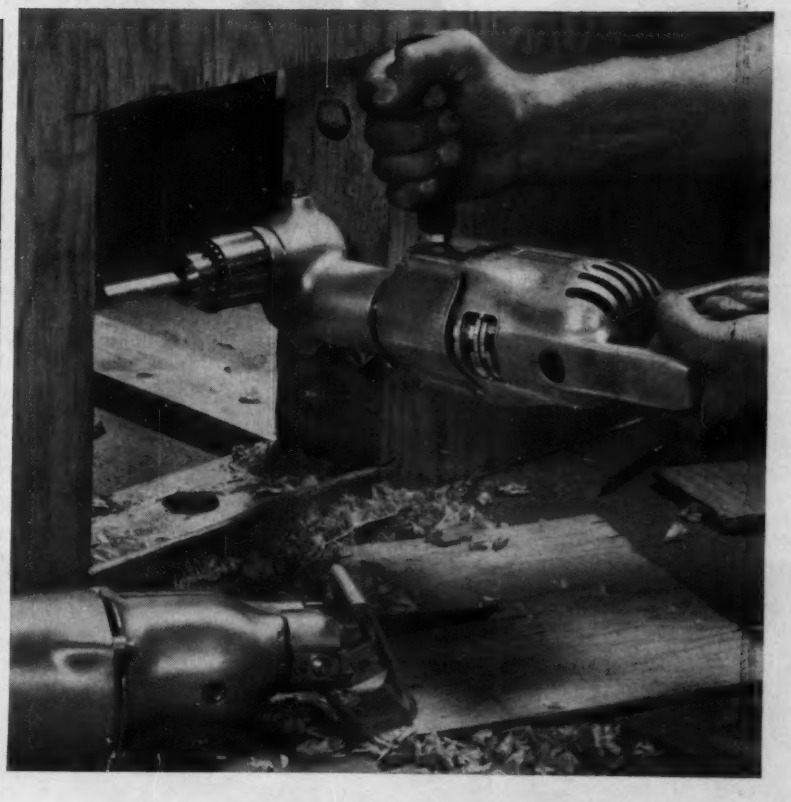
James McHugh Construction Co., Chicago, Ill. Unit No. 1, Potomac Interceptor Sewer, near Great Falls, Va. Government Dept. of Sanitary Engineering, Washington, D.C. $4,096,520.

Morrison - Knudsen Co., Inc., Boise, Idaho. Colorado River storage project, Glen Canyon Ship Rock transmission lines, Arizona and New Mexico. Bureau of Reclamation, Denver, Colo. $4,221,-337.

Morley Construction Co., Los Angeles, Calif. Addition to chemistry-geology building on campus. University of California, Los Angeles. $4,179,000.

White Oak Excavators, Inc., Plainville, Conn. Low bid on grading and culvert over Hockanum River approach from Founders Bridge. Connecticut State Highway Commission, Hartford. $4,651,776.

H. B. Zachry, San Antonio, and **Brown & Root,** Houston, Tex. Low bid on railroad relocation, Amistad Dam, Rio Grande International Dam Project, Texas. International Boundary and Water Commission, El Paso, Tex. $10,-458,094.



DRILL IT ANY WAY

...with Black & Decker Right Angle Drill's 360° self-locking swivel head

Right from the start, you'll find the Black & Decker Right Angle Drill has a head for getting around corners. It goes to any degree (up to full 360°) and locks, to get into tight places. Its 2-speed head at the business end, removable handle for use on either side, its heavy-duty ball-bearing construction throughout . . . all make this drill your right choice from any angle. Black & Decker tools are sold by leading distributors everywhere. *For sales or service, look in the Yellow Pages of your telephone book under* TOOLS ELECTRIC

Black & Decker
CUTS MAN-HOURS TO MINUTES

☐ Sanders
☐ Saws
☐ Vacuum Cleaners
☐ Hammers

THE BLACK & DECKER MFG. CO., Dept. 2210
Towson 4, Md. (In Canada: Brockville, Ont.)

☐ Please arrange for a demonstration of.....
☐ Please send me more information on.....

Name.....Title.....
Company.....
Address.....
City.....Zone.....State.....

Circle 55 on Reader Service Card

put CP on the job...

keep well ahead of the shovels on every project! You can't buy a better drilling combination than a Chicago Pneumatic G-900 Tracdril and a CP-600 "Power Vane" Rotary Compressor. Bid the rock removal portion of your next job with confidence . . . you can count on the job-proven dependability of "Power Vane" Compressors and the ground-covering capabilities and high drilling speed of CP Tracdrils.

Compressor logs prove, on job after job, that the "Power Vane" compressor design saves you money . . . cuts delay.

Two-stage design permits continuous operation at pressures to 125 psig . . . lowers power consumption to reduce fuel costs – effecting big dollar savings...produces cooler discharge air to prolong hose life.

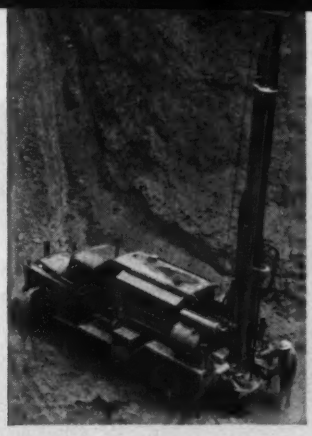
These characteristics are not attainable without two-stage compression.

Fuel-thrifty, normally-aspirated engines maintain torque and power at *all* operating speeds, maintain efficiency at high altitudes.

Tandem arrangement of stages gives simple positive drive, eliminates power losses and service troubles resulting from gear or chain drives.

For full information on CP Construction Equipment write to: *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.*

T-350 REICHdrill, truck-mounted, is an ideal drill where you have long distances between drilling sites. This all-hydraulic, top drive, rotary drilling rig is for holes to 5⅞". Available crawler-mounted for bad ground or where the drilling operation is localized.

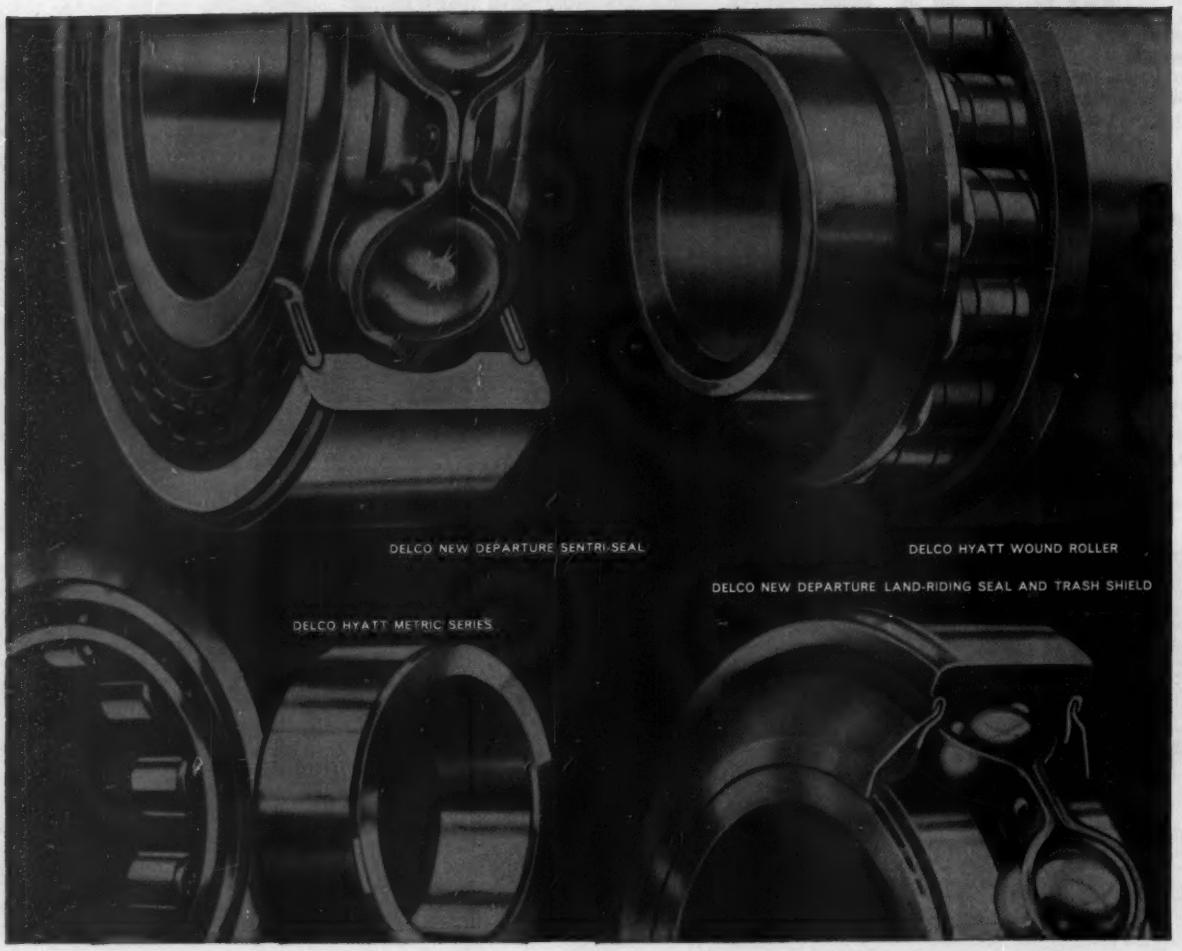


G-900 Tracdrills can drill to left or right with boom at right angles to tracks, swing a full 180° . . . shift quickly from toe holes to 11-foot high horizontals. You get more blast holes from every drilling position.

Chicago Pneumatic

PORTABLE AIR COMPRESSORS • PNEUMATIC AND ELECTRIC TOOLS
REICHdrills • THREE-CONE AIR-BLAST BITS • ROCK DRILLS

With G-900 Tracdrills you get maximum drilling time . . . all boom positioning is hydraulic. Drill controls at boom end save time and steps. Fast-acting automatic brakes lock drill in position the instant tramming throttles are released.


DELCO NEW DEPARTURE SENTRI-SEAL
DELCO HYATT WOUND ROLLER
DELCO NEW DEPARTURE LAND-RIDING SEAL AND TRASH SHIELD
DELCO HYATT METRIC SERIES

simply say Delco

AND REDUCE UNPLANNED DOWNTIME...

Keep rolling equipment on the move; keep stationary units and tools in operation by making necessary bearings replacements with Delco New Departure Ball and Delco Hyatt Roller Bearings. They have become the standards of the industry because of their reliability and long life under the most severe service conditions. ■ METRIC SERIES . . . Precision roller bearings with built-in extra capacity for transmissions and gear boxes. WOUND ROLLER . . . Made in all sizes, operates with inner race or directly on shafting. LAND-RIDING SEAL AND TRASH SHIELD . . . Excellent for severe contaminant conditions, moist or dry. SENTRI-SEAL . . . Most popular seal today. For every contaminant condition. ■ Whatever the reason for equipment being out of service and in the shop, the important thing is to get it on the job quickly and keep it working. Your Authorized Delco New Departure and Delco Hyatt Bearings Distributor can help you do it. These top quality, precision **Delco New Departure** and **Delco Hyatt Bearings** are nearby, distributed nationally through **United Delco**

UNITED MOTORS SERVICE, Division of General Motors Corporation

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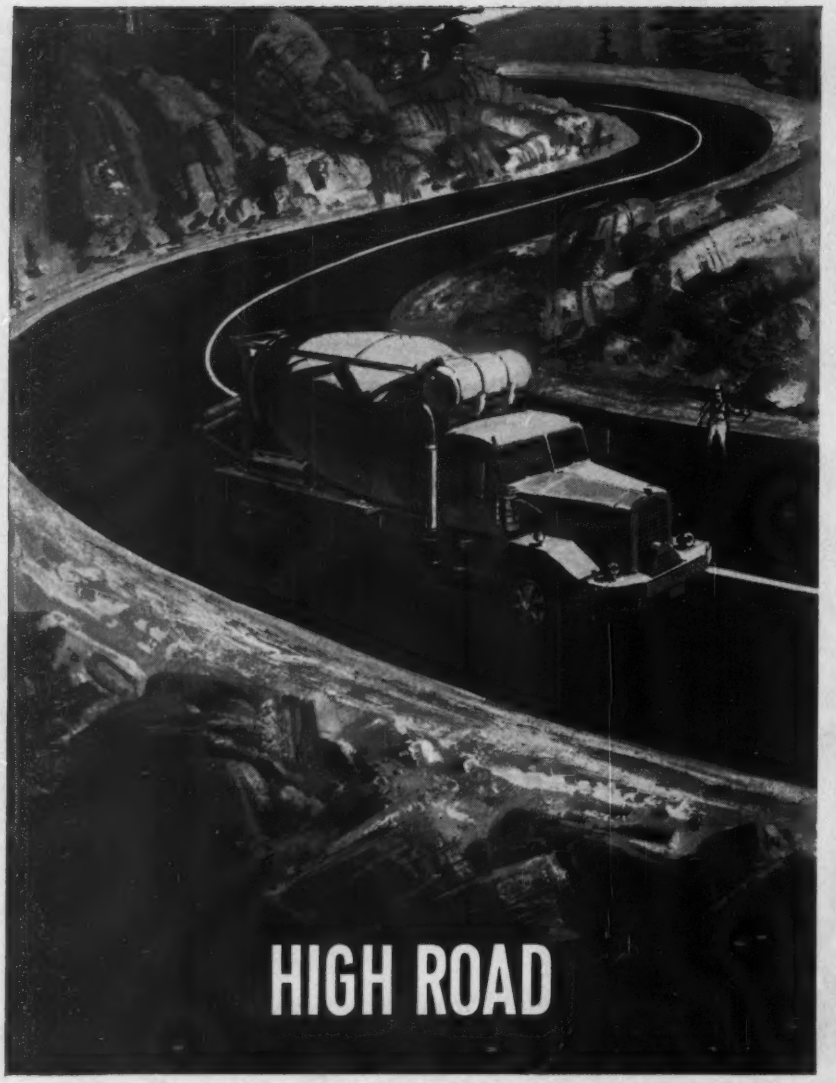
▲ *Circle 58 on Reader Service Card*

CONSTRUCTION METHODS

PICTURE OF THE MONTH

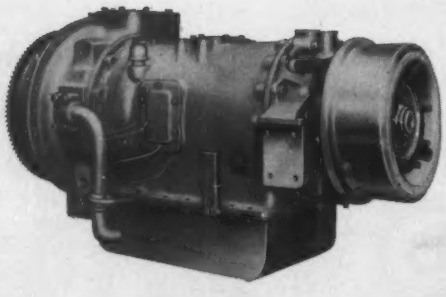
Dirty Rock? Not by a Dam Site

• At Wanapum Dam on the Columbia River near Vantage, Wash., two oil skin-clad workmen hang on to the business end of a high-pressure hose to direct a 90-psi jet of air and water over a rock surface that will soon be concreted. Grant County Constructors, a five-company joint venture headed by Morrison-Knudsen, holds a $93,277,690 contract to build the dam for Grant County Public Utility District. More than 1,000,000 yd of concrete will go into the project, which will be completed in 1964.



NOW A LIGHT-HEAVYWEIGHT TORQMATIC

Weighs only 985 lbs.—measures a scant

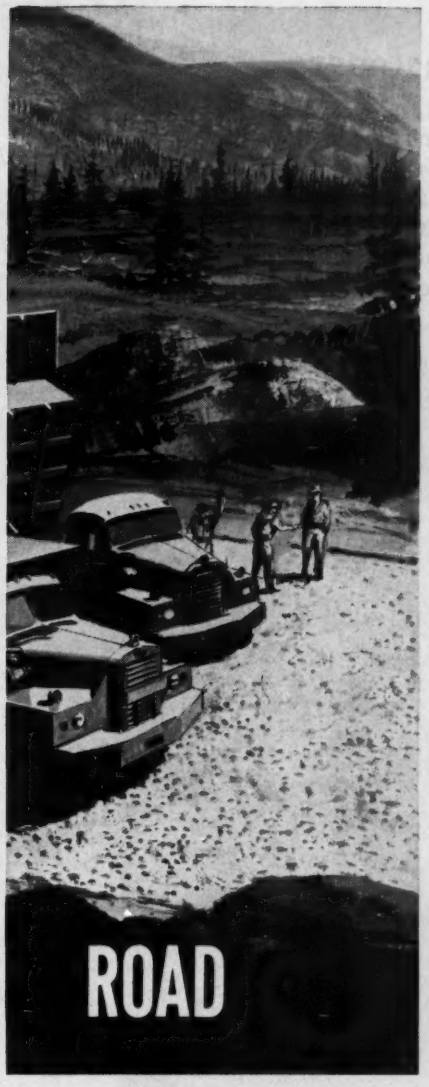


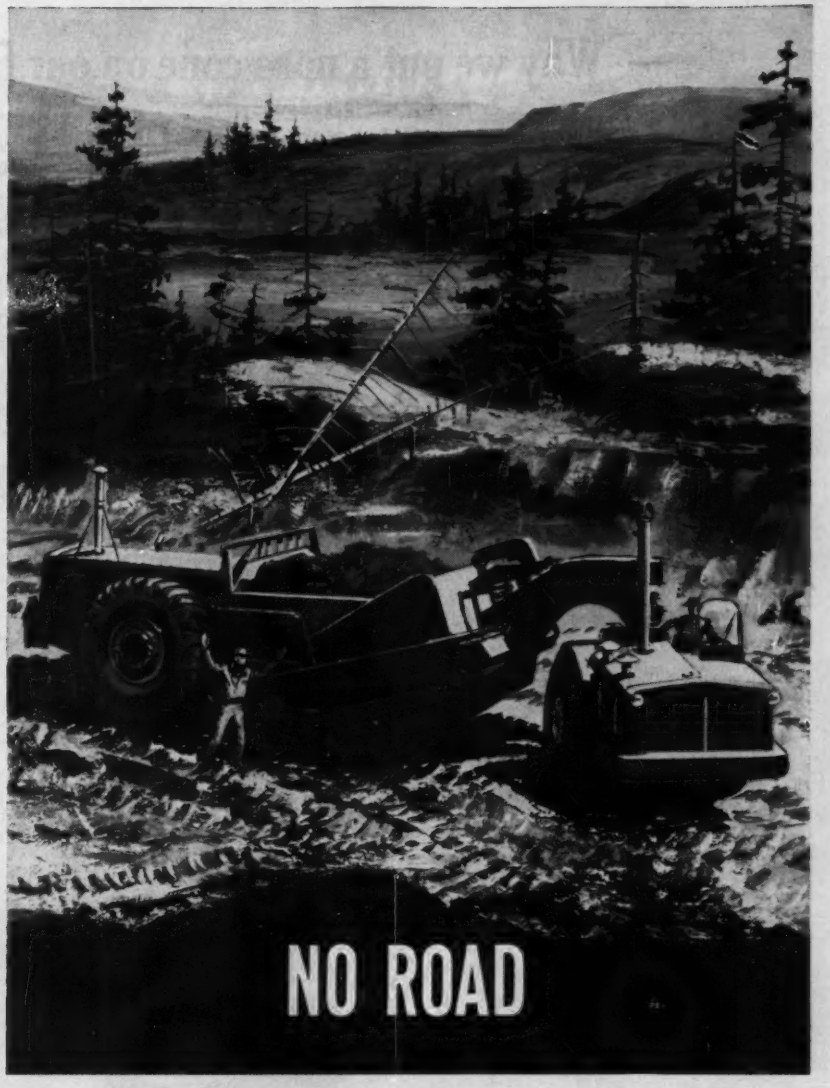
Now you can get all the savings of a power-shift hydraulic transmission in your 18-22 ton end dumps, 13-15 yard bottom dumps, 12-15 yard scrapers, big transit mixers and heavy-duty specialized equipment in a single lightweight, compact package.

The CLBT-4460 TORQMATIC DRIVE gives the driver complete control of the speed ranges throughout the work cycle, weighs only 985 lbs., measures only 40".

With 6 speeds forward and 1 reverse, this converter-transmission team can be either remote- or direct-engine mounted. Lock-up clutch, hydraulic retarder, straight-through output and 1.42:1 step gear ratio are standard—options include four different PTO locations, transfer gear output, drum-type parking brake and 1.32:1 step gear ratio.

Want to know more about the CLBT-4460 for the crash trucks, fire trucks, snow plows, logging trucks and other equipment you're planning to buy or build? Mail the coupon today.





DRIVE THAT'S RIGHT FOR ALL THREE

40"...fits 200-300 h.p. equipment

ALLISON DIVISION OF GENERAL MOTORS
DEPT. CM-4 INDIANAPOLIS 6, INDIANA

Please send me the brochure describing the Allison CLBT-4460 TORQMATIC DRIVE.

Name_____

Title_____

Company_____

Address_____

City_____ Zone_____ State_____

POWER-SHIFT IS OUR BUSINESS

Allison TORQMATIC

TORQMATIC® DRIVES

THE WORLD'S MOST COMPLETE LINE OF HYDRAULIC DRIVES
Over 980 Models used by 108 Manufacturers in
100 to 525 H. P. Equipment.

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Why we put a nose cone on our fasteners

Four important reasons. 1) To hold the fastener in the barrel. 2) To guide the fastener and assure straight penetration. 3) To automatically clean the tool's barrel between fastenings. 4) To show visual proof of proper penetration. Without that patented "nose cone" and without our austempering process, we could never guarantee 100-for-100 fasteners and sleep nights. This way, you get the guarantee, and we get some rest. More powder actuated fastenings are made with Ramset red-tipped fasteners than all others combined. For immediate delivery call your local Ramset dealer. He's listed in the Yellow Pages under "Tools." You can count on him for on-the-site deliveries.

Ramset® WINCHESTER-WESTERN DIVISION **Olin**
281-J Winchester Ave., New Haven 4, Conn.

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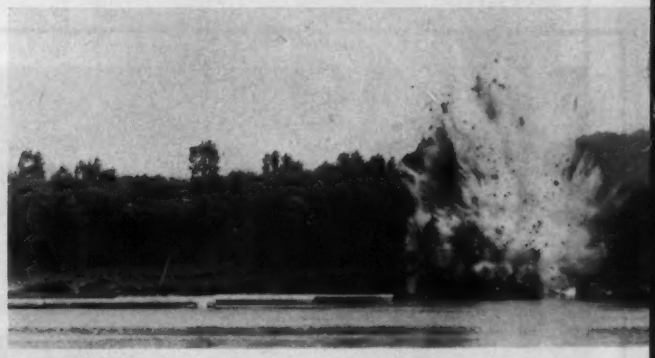
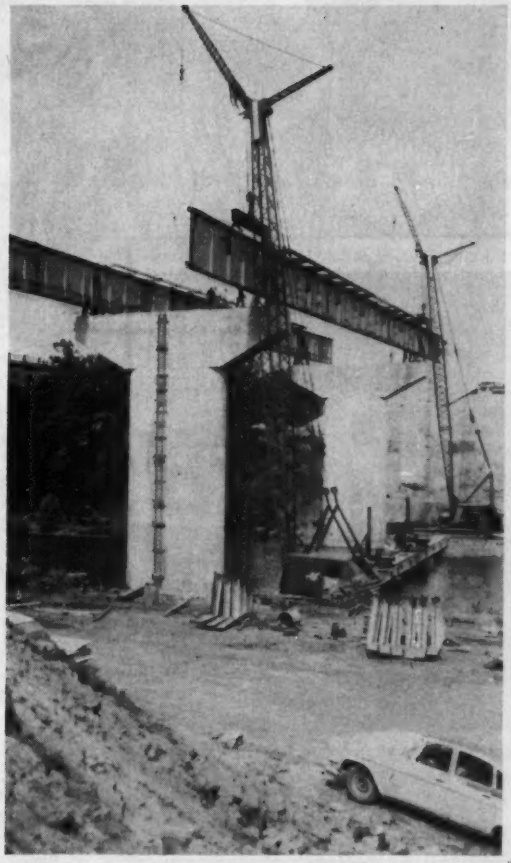
Construction News in Pictures . . .



Dam Razing

Obsolete locks and dams on the Ohio River are being blown up by Dravo Corp., Pittsburgh. Charges of explosives and their fuses are strung out across fixed weir and pier of Lock and Dam 28, Huntington, Va. (top photo). Next, rubble and spray fly as 600 lb of explosives remove possible navigation hazard in the pool to be formed by new high-lift Greenup Lock and Dam. About 16,000 cu yd of concrete must be drilled and shot.



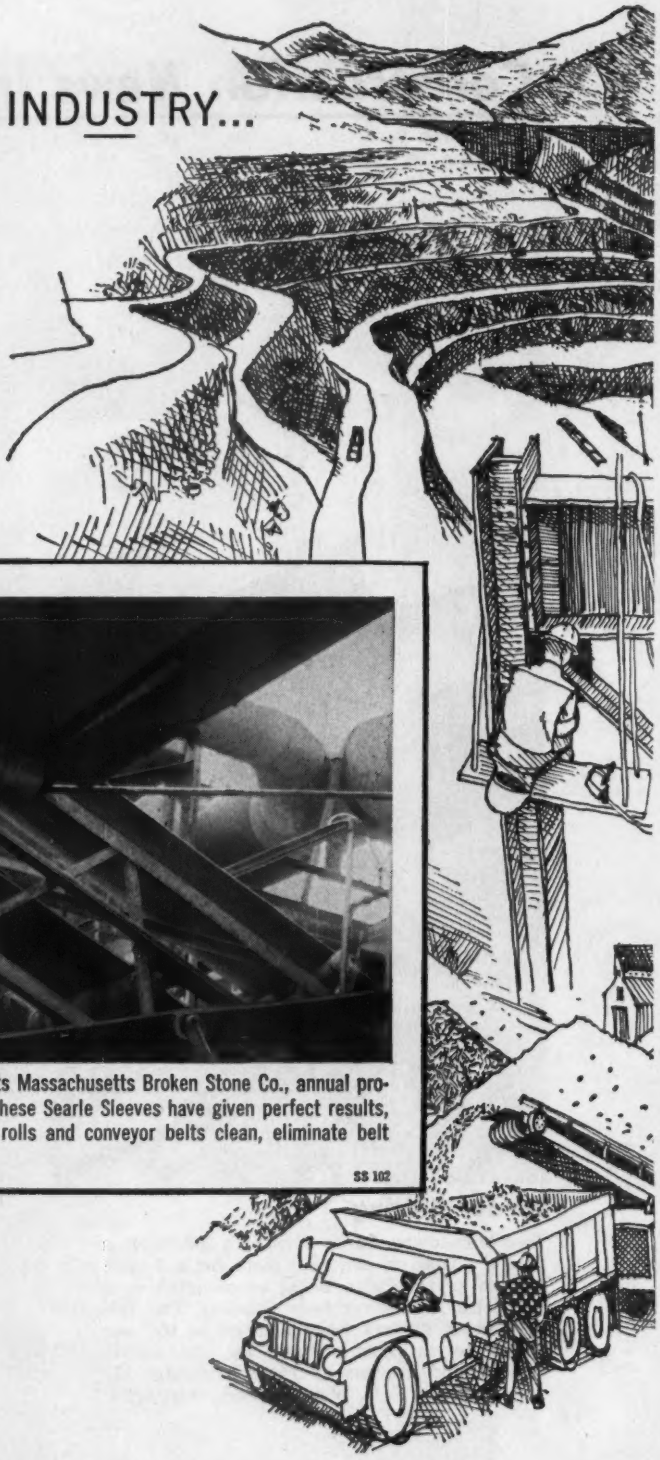
Girder Raising

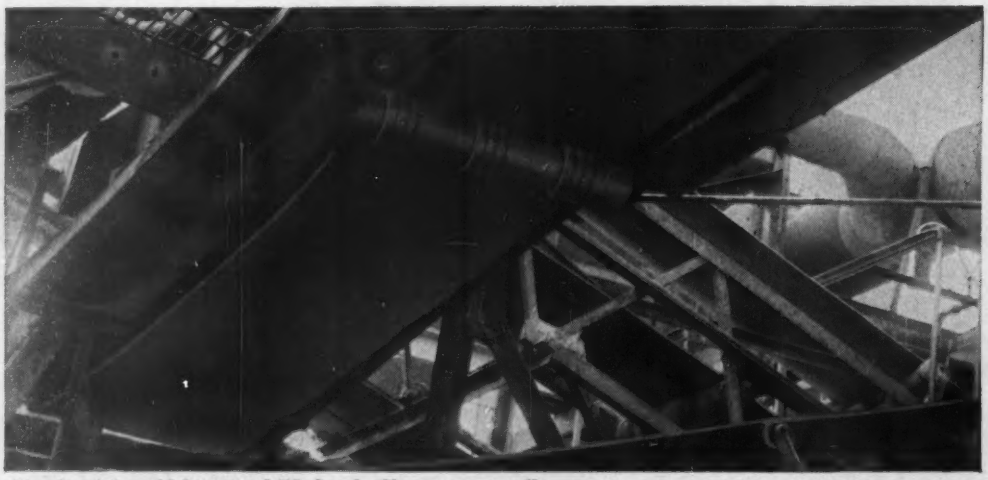
Two Manitowoc cranes position a 262-ft-long, 98-ton girder on concrete piers for a 5-span riveted plate bridge being constructed over the Schuylkill River near Reading, Pa. The 12-ft-deep girders were trucked to the site in three sections. They are fabricated, spliced, and erected by Phoenix Bridge Co. for G. A. and F. C. Wagman, Inc., contractor.

Seaside Scraping

On the rain-swept shore of Humbolt Bay, near Eureka, Calif., machines are moving 700,000 cu yd of earth in relocation of 3½-mi section of U.S. 101. Fills range from 2 to 40 ft. One 1,135-ft long fill was limited to a rise of 3 ft per week, to allow subgrade to settle. Morrison-Knudsen Co, is contractor, in association with Mercer, Fraser Co., Eureka.

US AT THE HEART OF INDUSTRY...

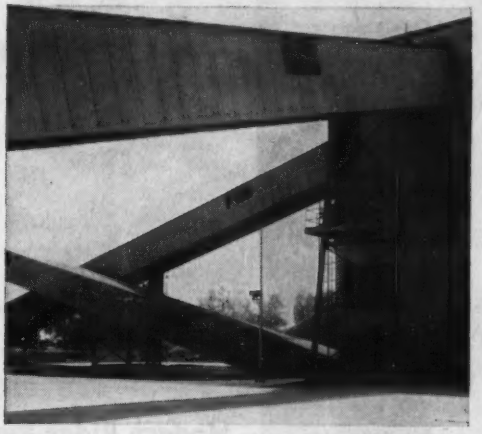




"I only wish we'd known of US Searle Sleeves sooner," reports Massachusetts Broken Stone Co., annual producers of 500,000 tons of crushed stone and bituminous concrete. "These Searle Sleeves have given perfect results, eliminated hours of breakdown, seem wearproof. They keep idler rolls and conveyor belts clean, eliminate belt 'wandering' and edgewear."

SS 102

For mining and construction men across the land, US Industrial Rubber Products are helping make tough jobs easier, faster, and more profitable. Small wonder that US is the largest producer of industrial rubber products in the world.



Six men and a group of US Conveyor Belts handle over 2,450,000 tons of material a year to keep a 6-million-barrel-a-year Dundee cement plant running. These belts withstand the abuse of clay, coal, gypsum, and finished cement... are one of the reasons why Dundee produces at a lower cost than the national average.

CB 104

Performing perfectly under one of the toughest applications for any belt—an atmosphere of stone dust and flying rock particles—U.S. Royal V-Belts have outlasted all other belts at Bethayres Concrete Products, Pa. These belts have demonstrated unequalled toughness, length stability, and smoothness despite the severe conditions under which they must perform.

VB 114

The only hose built like a tire, U.S. Royal Cord Air Hose amazed builders of a large aluminum plant in Texas by its ability to withstand abuse. Lying unprotected on a road surfaced with abrasive sea shells, the hose was continually run over by heavily loaded trucks and even 50-ton cranes—showed no damage even when carrying full working pressure.

H 108

For every industrial rubber product need, turn to US. For Conveyor Belts, V-Belts, the original PowerGrip "Timing"® Belt, Flexible Couplings, Mountings, Fenders, Hose and Packings... custom-designed rubber products of every description. Discover why U.S. Rubber has become the largest developer and producer of industrial rubber products in the world. See your U.S. Rubber Distributor or contact US directly at Rockefeller Center, New York 20, N. Y.

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

United States Rubber

MECHANICAL GOODS DIVISION

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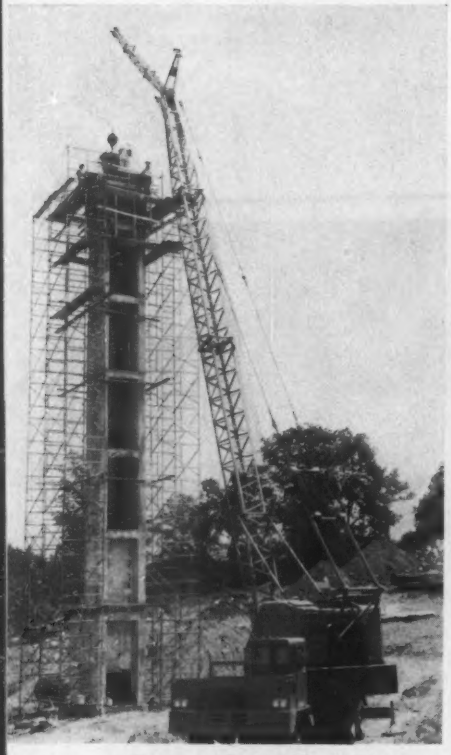
CONSTRUCTION NEWS IN PICTURES . . .

continued from page 63



Crane Tops Out Tower

A Koehring 330 truck crane lifts a concrete bucket in the construction of a 75-ft flume tower for a chemical plant near Columbia, Tenn. The crane is equipped with a 65-ft boom and 25-ft of jib. The B. H. Price Co. of Columbia is contractor for the chemical plant.

House Hoisting

A steel building tops out six 32-ft-high storage tanks at Monsanto Chemical's Springfield, Mass., plant. The 20x40-ft building, for watchmen and inspectors, was constructed at job site in 16 hr. Contractor Edward J. O'Leary Co., Holyoke, Mass., hoisted the structure with a 30-ton-capacity American truck crane. The building and epoxy-coated storage tanks were built by the Butler Mfg. Co.

Modern Ridge-Runner

Placing telephone lines along 50-deg slopes in the mile-high Bitterroot Mountains of Idaho, a 305-hp Hiller helicopter acts as a sky hook. The 900-lb poles are picked up at a staging area, flown over dense forest growth, and guided into holes blasted earlier. Evergreen Helicopters, Inc., McMinnville, Ore., is helping Pacific Telephone — Northwest District in relocating long distance lines.

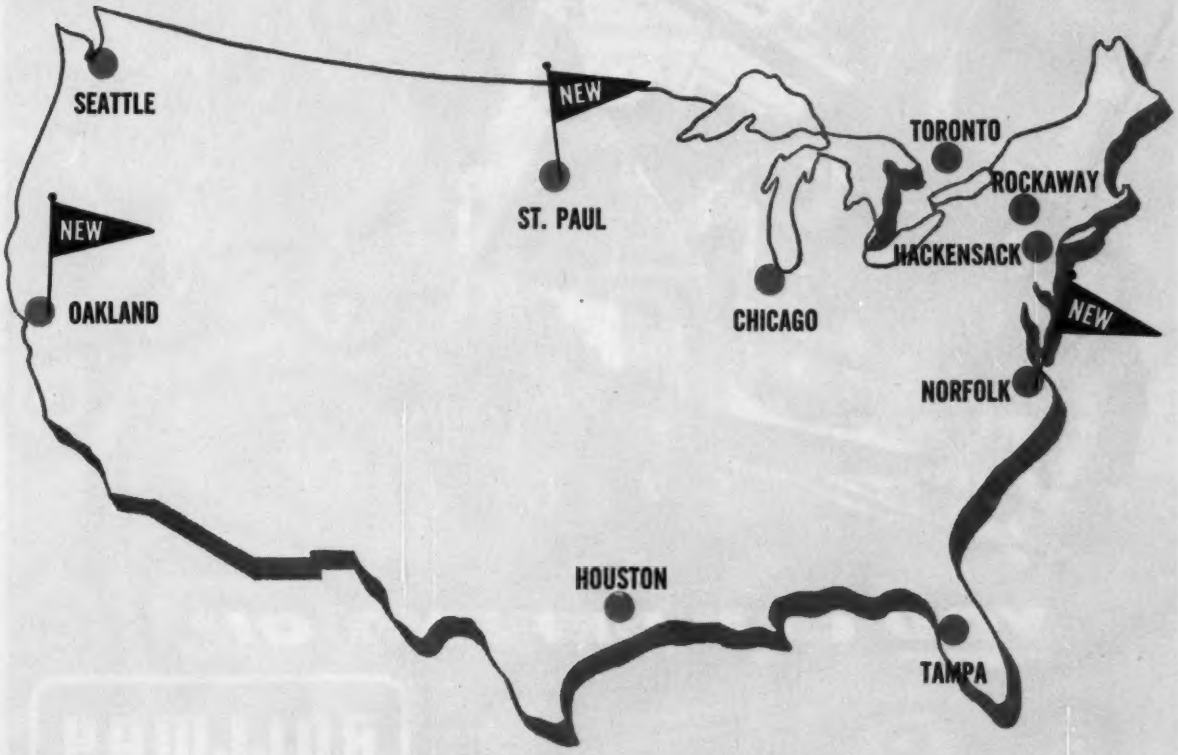
FOR QUICK ACTION ON A WET JOB

Now—Get Moretrench Dewatering Equipment Fast at 9 Strategic Warehouses

The opening of three new warehouses makes Moretrench Equipment immediately available at nine convenient points — north, south, east and west.

Call the branch nearest to you for quick service.

Rental, Sale, or Contract



MORETRENCH CORP.

389 Main Street Hackensack, N. J. HUbbard 9-7676 New York Tel.: CO 7-2283	4900 S. Austin Ave. Chicago 38, Illinois POrtsmouth 7-4212	315 W. 25th St. Houston 8, Texas UNderwood 4-7774	**WESTERN REPRESENTATIVE:** Andrews Machinery of Washington, Inc. Seattle 4, Washington	**CANADIAN REPRESENTATIVE:** Geo. W. Crothers, Limited Toronto, Ontario
P.O. Box 7581 Norfolk 15, Virginia NOrfolk 487-0551	4765 North Highway #8 St. Paul 12, Minnesota MElrose 3-6393	7701 Interbay Blvd. Tampa 9, Florida TAmpa 61-1871	**WESTERN REPRESENTATIVE:** Pacific Pumping Company 9201 San Leandro St. Oakland 4, California	**BRAZILIAN REPRESENTATIVE:** Oscar Taves & Co., Ltd. Rio de Janeiro

EXECUTIVE OFFICES AND PLANT: Rockaway, N. J.

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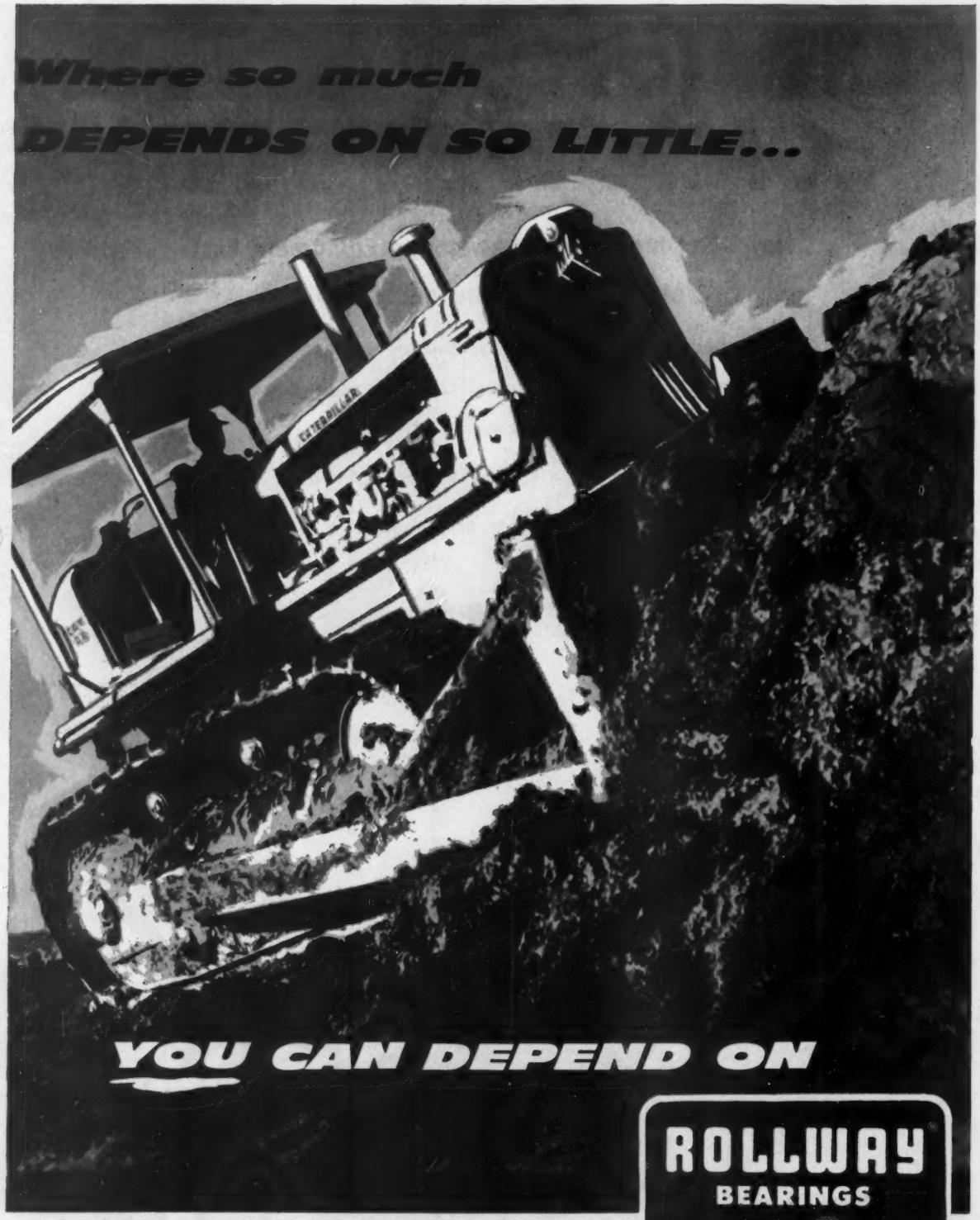

The rugged Caterpillar crawler Tractor above is depended upon throughout the world to keep the big jobs moving. A single bearing failure can cause costly delays, perhaps endanger job completion in contract time. That's why Caterpillar and other well-known makers depend on Rollway bearings in vital spots! Rollway Bearing Company, Inc., Syracuse, N. Y., manufacturers of a complete line of radial and thrust cylindrical roller bearings. Write for a complete product line catalog.

ENGINEERING OFFICES:
Syracuse • Boston • Chicago • Detroit • Toronto • Pittsburgh • Cleveland • Seattle • Houston • Philadelphia • LosAngeles • SanFrancisco

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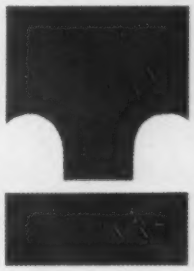
DETACH AND SAVE THIS HANDY BUYING GUIDE

HERE TO HOIST YOUR EARNING POWER TO NEW HIGHS



A NEW WORLD OF WORTH IN

'62 CHEVROLET JOBMASTER TRUCKS

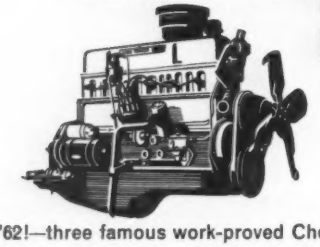
LITHO IN U. S. A.

NEW HIGH-TORQUE POWER

POWER'S UP IN EVERY WEIGHT CLASS

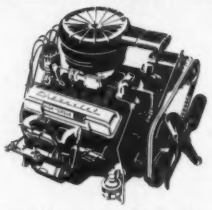
There's a new world of worth in the Chevy truck line for '62—trucks powered and built to work more, save more, *earn* more! Power's *up* in every weight class: big High Torque 261-cubic-inch 6* is new in light-duty models; new High Torque 327* powers middleweights; new 409 V8* puts out more pull in the heavy-weight trucks. And there's new medium-duty *diesel* power, too—a sure income booster on extra-tough runs! A total of nine great High Torque engines enables you to match truck power to your job precisely for top performance and economy. **Optional at extra cost.*

NEW WIDER CHOICE OF LIGHT-DUTY POWER



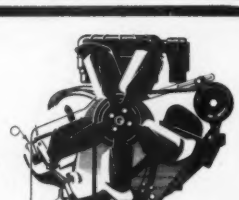
New for '62!—three famous work-proved Chevrolet truck engines for the Chevy light-duty line! Standard in all conventional models is the sure-saving High Torque 235 Six, a truck engine that's powered more payloads than any other in the history of hauling. *And, for 1962, the rugged, extra-durable 150-h.p. 261 Six is available at extra cost. Here's high torque power plus proved 6-cylinder economy—a combination that can put you money ahead on tough runs!* And, for the extra punch of V8 power, Chevy's 160-h.p. 283 V8 is available at extra cost.

NEW 327-CU.-IN. V8 FOR MEDIUM-DUTY MODELS



It's the biggest Chevy medium-duty engine yet, with more power and hard-pulling torque to keep maximum payloads rolling at minimum cost. Check the specs at your Chevy dealer's and you'll see scores of reasons for *efficient* performance: 185 h.p., 305 ft.-lbs. of torque, durable Moraine M-400 bearings, fuel-metering 2-barrel carburetor, hard-faced exhaust valves—premium components from top to bottom! New 327 V8 is optional at extra cost in Series 60 and 60-H. Economical heavy-duty 261 Six is standard in these models.

NEW 409-CU.-IN. V8 FOR HEAVY-DUTY MODELS



Here's the new dimension in High Torque power—409 cubic inches of efficient load-moving muscle, designed to *GO* and built to *keep* going in hard-pressed heavyweight duty. It's available as an extra-cost option for all Series 80 models, including the M80 tandems, with an extra wallop to get even king-sized loads under way in a hurry, and keep them moving easily and efficiently. You get 252 horsepower, and a whopping 390 ft.-lbs. of torque, backed by a build that just won't quit. It's loaded with the best in premium-quality, top-durability design features—assurance that your tough jobs are tamed for good!

1962 CHEVROLET HIGH TORQUE GASOLINE ENGINE (PERFORMANCE DATA AND APPLICATIONS)

HIGH TORQUE ENGINE MODEL	145 SIX	235 SIX	235 SIX	261 SIX	283 V8	327 V8	348 V8	409 V8
MAXIMUM GROSS HP @ RPM...	80 @ 4400	135 @ 4000	135 @ 4000	150 @ 4000	160 @ 4200	185 @ 4400	220 @ 4400	252 @ 4000
MAXIMUM NET HP @ RPM.....	65 @ 3600	115 @ 3600	110 @ 3600	130 @ 3800	137 @ 4000	158 @ 4000	180 @ 4000	215 @ 4000
NET HP @ GOVERNED RPM.....	——	——	——	——	——	156 @ 3700	180 @ 3700	213 @ 3700
GROSS TORQUE, LB.-FT. @ RPM.	128 @ 2300	217 @ 2000	217 @ 2000	235 @ 2000	270 @ 2000	305 @ 2000	325 @ 2600	390 @ 2400
NET TORQUE, LB.-FT. @ RPM..	118 @ 2200	195 @ 2000	192 @ 2000	218 @ 2000	250 @ 2000	280 @ 2000	300 @ 2400	352 @ 2400
DISPLACEMENT, CUBIC INCHES.	145	235	235	261	283	327	348	409
CARBURETOR TYPE.....	Dual	Downdraft	Updraft	Downdraft	2-barrel	2-barrel	4-barrel	4-barrel
TRUCK SERIES APPLICATIONS								
AS STANDARD EQUIPMENT....	R10 (Corvair 95)	C10-50; L50; K10-20, P10	P20-30	C, L, T60, 60-H	——	——	C, L, M, T80	——
OPTIONAL AT EXTRA COST....	——	——	——	C10-50; L50; K10-20	C10-50; L50; K10-20	C, L, T60, 60-H	——	C, L, M, T80

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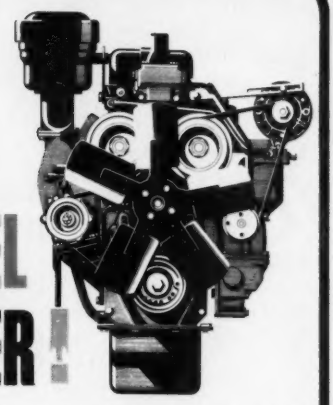

NEW DIESEL POWER!

or '62, Chevrolet offers high torque diesel erformance and economy—new money-aking might for medium-duty trucks! With e rugged General Motors 4-53 Diesel en-ne, all the performance and economy ad-ntages of diesel power can now be realized full in this lighter weight class. This is the gine that has set new standards in the esel power industry, with compact propor-ns, lightweight toughness and high per-rmance combined to the highest degree. nd the fuel economy, low upkeep and day-ter-day dependability it delivers in hard-essed, high-mileage operation more than e up to traditionally high diesel engine andards. Here's an engine that's designed quickly pay for itself and cut operating sts throughout the life of the truck.

ENGINE SPECIFICATIONS AND PERFORMANCE DATA

del	General Motors 4-53
pe	Two-Cycle Diesel
splacement	212.3 cu. in.
mber of Cylinders	4
re & Stroke	3⅞ in. x 4½ in.
mpression Ratio	17 to 1
ximum Brake Horsepower	130 @ 2800 RPM
ximum Gross Torque	271 ft.-lb. @ 1500 RPM
ton Speed @ 2800 RPM	2100 ft. per minute

NEW EASY-VIEW STYLING

PRACTICAL NEW TRUCK APPEARANCE!

Thanks to Chevy's handsome new styling, drivers will *see* better on the job! Newly designed hood slopes neatly down at front and sides for maximum up-front visibility. It's a functional design that virtually eliminates blind spots for greater driver safety and efficiency.

NEW JOB-MATCHED EFFICIENCY

MORE MODELS TO HANDLE MORE KINDS OF JOBS!

DETACH AND SAVE THIS HANDY BUYING GUIDE

C1534 Fleetside Pickup ▾

C1504 Stepside Pickup ▴

K1534 4-WD Fleetside Pickup ▾

C1405 7½-ft. Panel ▾

C1416 Suburban Carryall ▾

P1345 Step-Van 7 ▾

P2545 Step-Van ▾

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B-MATCHED
GHT-DUTY MODELS FOR '62

S FOR EVERY CHORE . . . READY TO YOUR WORK WITH PERFORMANCE PUTS YOU DOLLARS AHEAD EVERY THE WEEK!

almost any light-duty job . . . and you'll t Chevy for '62 offers a truck that's more match for it. Here's a *long* lineup of Job- trucks, cost choppers for every chore W's up to 10,000 lbs., sleek new Easy-View more 6-cylinder power, advanced short-stroke V8's, the latest in tough truck components—everything that adds up to more economical, *more profitable performance.* Pick from *conventional* models with Independent Front Suspension, a proved paying advantage that saves on truck wear, cargo damage and maintenance expense . . . from *Forward Control* models that offer the latest in dollar-saving efficiency on stop-and-go runs . . . from go-anywhere 4-wheel drives that give up to twice the traction . . . from a complete roster of rugged light-duty Jobmasters, each one out to save extra dollars for owners in '62!

6 JOB-MATCHED PICKUPS

ou get a new wider choice of 16 Chevrolet ickups for '62—6 handsome high-capacity leetside models, 8 convenient Stepside odels—and a pair of rear-engine Corvair 5's, too! These huskies come equipped with *g* bodies (up to nine feet long) to handle utsized loads with ease. Sturdy close-fitting ilgates on all models reduce spillage of ulk cargoes; tough select-wood floors, re- essed steel skid strips, and a low close-to- e-road build make loading and unloading cinch. You'll go *first class* in any one of ese pickups . . . get the benefit of sturdy- uilt construction, big comfortable cab—plus verything else you need to match your work ith a brand of performance and economy at will save you time and money every day!

OB-MATCHED ENGINES & COMPONENTS

Whatever you look for in a truck, Chevy's got enty of it for '62! *Cabs* are big and roomy; uilt solid and sealed tight. *Frames* are of remium-quality steel with extra reinforce- ents. Rugged *rear axles* match your tough- st jobs with top performance and economy. *nchro-Mesh and fully automatic transmis- ons* are available for most models. Large ameter *brakes* assure safe, sure stops nd long brake life. Smooth hydraulically ctuated *clutches* match engine torque to ork harder, last longer. *And there's never en so much light-duty power.* Standard the famous fuel-saving High Torque 235 x; optional-at-extra-cost power plants are e big hard-working High Torque 261 Six nd short-stroke 283 V8.

ROOMY, RUGGED PANELS! Best choice for big loads—big savings, too—Chevy's panels come in 7½- or 10-ft. body lengths. Load spaces are 175 or 231 cubic feet, with payload capacities of up to 3,000 lbs. Cargoes have the protection of tight weather-sealed bodies and Chevy's cradle-soft Independent Front Suspension.

CARRYALLS FOR WORK LOADS OR LOADS OF FUN! Here's your answer if you mix business with pleasure—a 1962 Suburban Carryall! Combining station wagon styling with practical panel truck utility, the Carryall carries up to 8 adults or 950 lbs. of cargo with the seats removed. Four-wheel drive is also available for tough go-anywhere jobs.

STURDY LIGHT-DUTY STAKES! With room and brawn aplenty, these '62 Chevy stakes come with bodies of 8- or 9-ft. lengths to handle your bulkiest loads. Wheelbase lengths range from 127 to 133 inches with GVW's as high as 10,000 lbs. Tough wood bodies are extra durable, joined together by recessed steel bolts.

CHASSIS-CABS FOR MANY BODIES! Available for many special bodies, '62 Chevy light-duty chassis-cabs come in cab-to-axle lengths of 42, 54 or 60 inches. Featuring Independent Front Suspension and a wide choice of power, you can tailor these Chevies exactly to your job needs.

EFFICIENT STEP-VANS AND FORWARD CONTROL CHASSIS! Here's efficiency and economy for your stop-and-go runs—route-ready Step-Vans with bodies 8, 10, and 12 feet long and GVW ratings from 5,600 to 10,000 lbs. Large, roomy interiors and convenient sliding side doors make loading and unloading a breeze. Six Forward Control Chassis are also available for special body installations.

HANDY STEP-VAN 7! New walk-in convenience for light-duty route deliveries! You get a 7-foot body—211 cu. ft. of load space—astride an easy-handling 102-inch wheelbase. Power plant is the gas-saving High Torque 235 Six. And Chevy's Independent Front Suspension saves truck wear, reduces maintenance, cargo damage and driver fatigue.

GO-ANYWHERE 4-WHEEL-DRIVE CHEVIES! Chevy's 4-wheel drive gives you up to twice the traction to dig in and go where the going's roughest. You shift from 2- to 4-wheel drive and back again with just the flick of a lever. Available on pickups, panels, chassis-cabs and Suburban Carryalls.

DETACH AND SAVE THIS HANDY BUYING GUIDE

OWNER-PROVED CORVAIR 95 EFFICIENCY

QUALITY IS THE KEY WORD HERE! Introduced a year ago, Corvair 95 pickups and Corvan have shown owners everywhere a brand of cost-cutting quality that's unique in this truck class. There's lasting worth in every one—starting with a sturdy build that features rugged unitized body-frame construction and tough double-walled body side panels, durable High Torque 145 Six engine that never needs water or antifreeze, low-maintenance unitized engine and transaxle drive (Unipack), smooth-going 4-wheel independent suspension (2,500-lb. rated capacity, front and rear!), to mention just a few! With a lineup of great features as long as your arm, these 1962 Corvair 95's are as *tough* as they are efficient—a fact they've amply demonstrated on scores of jobs the country over.

EFFICIENCY *never meant so much!*

Here are trucks that offer more cargo space for their size and weight than anything that's ever taken to the road. With a compact, *unitized* power train, the major portion of the chassis need accommodate only cargo and cab. The roomy Corvair 95 cab takes up little more than one third of the overall length . . . *and all the rest is load space,* over 9 feet of it, astride a nimble 95-inch wheelbase. And, with the load space located midships, truck and load weight is distributed *evenly*, which results in less strain on chassis and tires—performance that stays trouble-free longer.

CORVAN PANEL

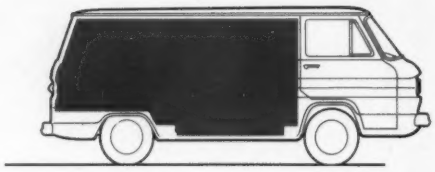
• Built for bigger earnings! • *Load space* 191 cu. ft. big! • High 1,700-lb. payload capacity! • *Big* double doors that open 4′ 5″ wide (right-side doors standard; left-side doors optional*). Wide-opening double rear doors! • Easiest loading—low 16¼″ side loading height! • High 4½-foot interior height for convenient cargo handling! • Extra ruggedness with integral body-frame design! • Better economy and traction provided by High-Torque 145 Six at rear! • Nimble maneuvering through short 95-inch wheelbase and smooth independent 4-wheel suspension! • Comfortable driver compartment with single driver's seat or optional* 3-man or right-hand auxiliary seat!

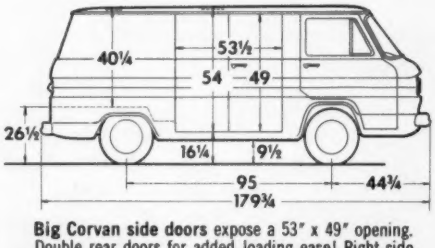
RAMPSIDE AND LOADSIDE PICKUPS

• More load space than conventional half-tonners! • Full-width pickup box gives 80 cubic feet of load space! Cargo capacity up to 1,900 lbs.; 4,600-lb. GVW! • Deep-well cargo area midships for bulky loads! • Low 16¼″ floor height saves work when loading! • Optional (extra cost) flat floor gives 37 sq. ft. of flat loading area, plus cargo area underneath! • Engine, transmission and axle combined in one compact unit at rear for maximum efficiency, easy servicing! • Sturdy integral body-frame design! • Independent 4-wheel suspension! • Short wheelbase and turning radius for easy handling! • Plenty of comfort in spacious 3-man cab!

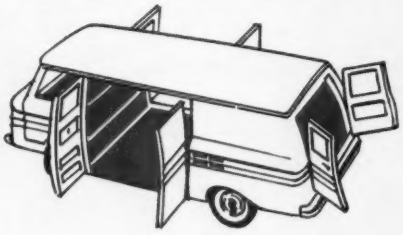
*Extra cost

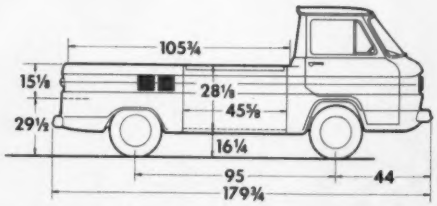
DRIVER'S UP FRONT ENGINE'S IN THE REAR . . . ALL THE REST IS LOAD SPACE!





Big Corvan side doors expose a 53″ x 49″ opening. Double rear doors for added loading ease! Right-side doors standard; left-side doors optional, extra cost.





Exclusive Rampside loading ramp allows you to roll on heavy loads, improves working efficiency!

R1254 Rampside Pickup ▲

R1205 Corvan ▼

DETACH AND SAVE THIS HANDY BUYING GUIDE

C5309 12-ft. Stake ▲

D6503 with 16-ft. Van Body ▲

T6303 with Van Semi-Trailer ▼

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-MATCHED
IUM-DUTY MODELS FOR '62

RE EARNING POWER THAN EVER BEFORE

a bigger, stronger High Torque 327-cu.-in. eries 60 . . . new diesel power . . . famous ved 6's and V8's for every truck in this up for '62! Every model gives you new w styling for better appearance, greater advanced Independent Front Suspension h the way to greater profits . . . a sturdy, comfortable cab to make work easier for the driver. From stem to stern, these new medium-duty Chevies are packed with tough truck components that last and save you more money in the long run. They're built to *stay* on the job and *pay* on the job—to deliver a brand of rock-ribbed performance that can't be beat in this weight class.

EE CAB TYPES—Three basic cab types wide choice of wheelbases and components e you to match the truck to your job ideally. se from 36 Conventional models; 18 Low Cab rd Chevies (93½ inches from bumper to of cab); or from 8 Jobmaster Tilt Cab trucks 72 inches from bumper to back of cab).

DIESEL MODELS—Now you can dieselize igh-mileage medium-duty jobs with a model to measure for them, and take full advantage sel power's long-lasting, big-saving ways. olet D60 Diesels come in 5 wheelbase s with GVW's as high as 19,500 lbs. In all s, transmission and rear axle gearing is d to the diesel's power output characteristics st performance under all conditions.

ROLET SERIES 60 DIESEL SPECIFICATIONS

el.....Wheelbase; Cab-to-Axle lengths	**Model**	**WB**	**CA**
	D6103	133″	60″
	D6203	145″	72″
	D6303	157″	84″
	D6503	175″	102″
	D6803	197″	124″
s Weight Ratings..GVW	15,000 to 19,500 lb.		
GCW	32,000 lb.		
, Front.....Type	Independent Suspension		
Rating	5000 lb.		
, Rear..Make & Model	Chevrolet		
Rating	15,000 lb.		
Type	Single- or 2-Speed*		
es, Service..Standard	Vacuum-Hydraulic		
Optional	Air-Hydraulic*		
ne.....Make & Model	General Motors 4-53		
Type	2-Cycle Diesel		
Gross Horsepower	130 @ 2800 rpm		
Gross Torque	271 lb-ft @ 1500 rpm		
Clutch Dia.; Facing Area	13″; 178 sq. in.		
rator.....Type	A.C. Delcotron		
Volts; Amps	12V; 52A		
.....Base Size	8-22.5/8PR Tubeless or 7.50-20/8PR Tube*		
Maximum Size	10-22.5/10PR Tubeless* or 9.00-20/10PR Tube*		
smission..Make; Type	Clark 264VO; 5-Speed		
ls.....Base	Chevrolet Disc		
Optional	Budd 6-stud Disc* or Cast*		

a-cost equipment.

NEW HIGH TORQUE 327 V8 ENGINE

Available at nominal extra cost for Series 60 models, Chevy's new High Torque 327 V8 engine brings 28% more net torque for extra performance ability on medium-duty jobs where heavy loads, difficult terrain or tight schedules place unusually severe demands on equipment. Traditional Chevy heavy-duty V8 durability stems from components like tough Moraine M 400 bearings, vacuum-spinner 3700 rpm governor, hard-faced exhaust valves, and self-adjusting hydraulic valve lifters.

FAMOUS 6-CYLINDER ECONOMY

Top fuel economy is what you get with either of Chevy's medium-duty truck 6's—the High Torque 261 Six or High Torque 235 Six. Featuring free-breathing valve-in-head design, these engines give you *efficient* power and extra economy by way of features such as standard oil filter, extra-duty alloy bearings oil bath air cleaner, forged steel crankshaft and many more.

WORK-PROVED COMPONENTS

A 1962 Chevy can take it, thanks to tough tailored-to-the-job components like these: tough-built frames with massive K-brace crossmembers; *wide range variable-rate rear springs*; *smooth 4- and 5-speed Synchro-Mesh transmissions* standard; *rugged rear axles* with durable hypoid gearing, capacities up to 17,000 lbs.; *big, safe brakes for all models* (vacuum-hydraulic boosters standard). When Chevy builds a truck, it's a *truck!*

DETACH AND SAVE THIS HANDY BUYING GUIDE

M8503 Tandem with 10-Yard Body

NEW WIDER CHOICE OF CHOICE EQUIPMENT

JOB-MATCHED HEAVY-DUTY MODELS FOR '62

Here are the best of the big ones—a full range of heavyweights, rounding out the Chevrolet fleet for '62. Your choice includes lean-muscled Series 60-H models, brawny Series 80 models and mountain-moving Series M80 tandems. Chevrolet High Torque 6-cylinder or V8 power (or diesel power in 60-H models) pays off in money-saving payload performance on all kinds of heavyweight hauls. And in chassis construction Chevrolet's 1962 heavy-duty lineup leads the industry with advanced Independent Front Suspension system providing a smooth ride, sure roadability and ruggedness to spare. Variable-rate rear suspensions for all single-axle heavyweights offer wide range action, a better ride empty, plus plenty of capacity.

1962 TOUGH-TASK TANDEM MODELS—Three super-rugged six-wheelers make up Chevy's M80 tandem Series; measuring 84, 102 and 120 inches cab to axle, they offer broad coverage of the tandem field. They're built on extra-tough chassis, with smooth-riding Chevrolet Independent Front Suspension as standard equipment, and an advanced-design Eaton-Hendrickson 30,000-lb. tandem bogie back under the load. Chevy's High Torque V8 power can be teamed with transmissions to match severest on- or off-road jobs. Power steering is standard for easier handling when the going's tough.

NEW SERIES 60-H GAS AND DIESEL TRUCKS—Rugged heavy-duty build . . . money-saving 6-cylinder power— that's what you get in every Series 60-H model. Standard power is the High Torque 261 Six; and, for 28% more working torque, the High Torque 327 V8 is optional at extra cost. *Also new for '62, tough 60-H Chevies are available with the special economy and low maintenance performance of diesel power, provided by the husky General Motors 4-53 Diesel.* Every model features big-load brawn built in throughout: ride-smoothing 7,000-lb. Independent Front Suspension system, rugged new 17,000-lb. rear axles, high 23,000-lb. GVW to master tough jobs like nothing else in this weight class!

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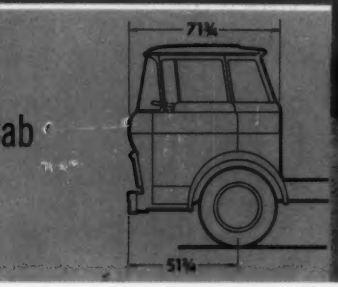
FROM 3 CAB TYPES



T8603 with Refuse Body

BIG TRUCK POWER AND COMPONENTS

NEW HIGH TORQUE 409 V8—Here's the most powerful Chevy gas engine yet, ready to turn out a mountain-moving 352 ft.-lbs. of *net* torque and 213 *net* horsepower to help your biggest loads moving! Built-to-last features like inside-outside air intake system, hard-faced exhaust valves with Roto-Coil valve rotators, self-adjusting hydraulic valve lifters (and many more) assure long engine life. Optional, extra cost, Series 80.

STANDARD HIGH TORQUE 348 V8—Standard power for Chevy's Series 80 heavyweights is the big, brawny High Torque 348 V8, with 180 net horsepower and 300 ft.-lbs. of net torque. It's especially designed to move big loads at lowest possible cost with a big reserve of stamina, highest quality components. It's a premium engine throughout—in bearing and valve materials and in lubrication and cooling.

HIGH-CAPACITY LADDER-TYPE FRAMES—Deep-down durability starts right here—deep-section side rails of extra-tensile-strength steel are joined by massive ladder-type cross-members. The result is a frame that combines high strength and resilience to handle highest capacity loads.

KING-SIZED BIG TRUCK BRAKES—Top stopping power from job-tailored brakes ranging up to 15″ x 3″, front, and 15″ x 7″, rear, (Series 80 models),—up to 642 square inches of lining area. Standard diaphragm-type vacuum-hydraulic boosters deliver a big bonus of braking power without loss of natural pedal feel. Air-hydraulic or full-air brakes are optional at extra cost.

HEAVY-DUTY TRANSMISSIONS—Smooth-shifting 4- or 5-speed Synchro-Mesh transmissions are standard in all heavy-duty Chevies. Close-ratio 5-speed units are also available as well as extra-cost 3- or 4-speed auxiliary units for tandem models. Also available at extra cost is work-saving Powermatic.

OPTIONAL I-BEAM FRONT AXLE—For the most extreme off-road duty, 9,000- and 11,000-lb. capacity I-beam axles are optional at extra cost for Series C80, L80 and M80 tandem models.

DETACH AND SAVE THIS HANDY BUYING GUIDE

NEW HIGH TORQUE POWER

New Easy-View Styling!

NEW DIESEL MODELS

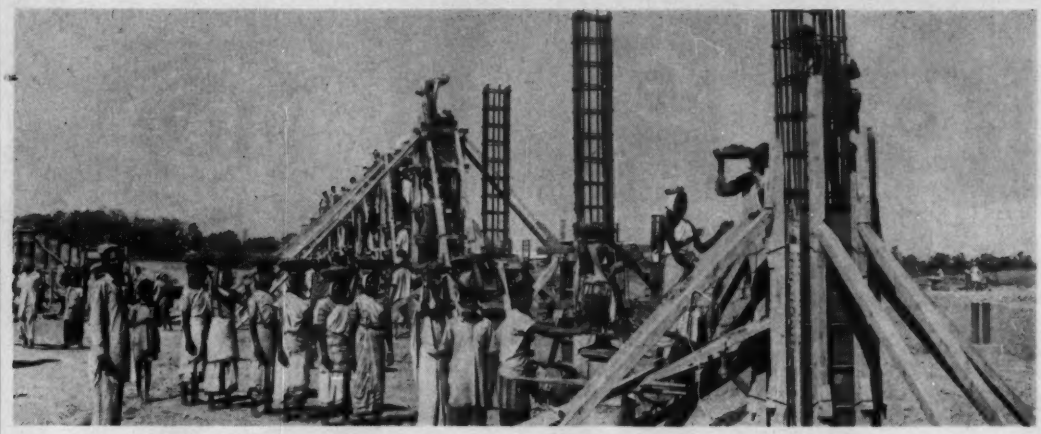
NEW JOB MATCHED EFFICIENCY

NEW CHEVIES BY THE HUNDREDS WITH NEW HIGHS IN HARD-WORKING POWER... NEW STYLING THAT DOES MORE FOR YOU... NEW JOB-MATCHED MODELS AND COMPONENTS . . . A NEW WORLD OF WORTH THAT'S OUT TO DO MORE WORK!

CHEVROLET

DETACH AND SAVE THIS HANDY BUYING GUIDE

Construction 'Round the World . . .

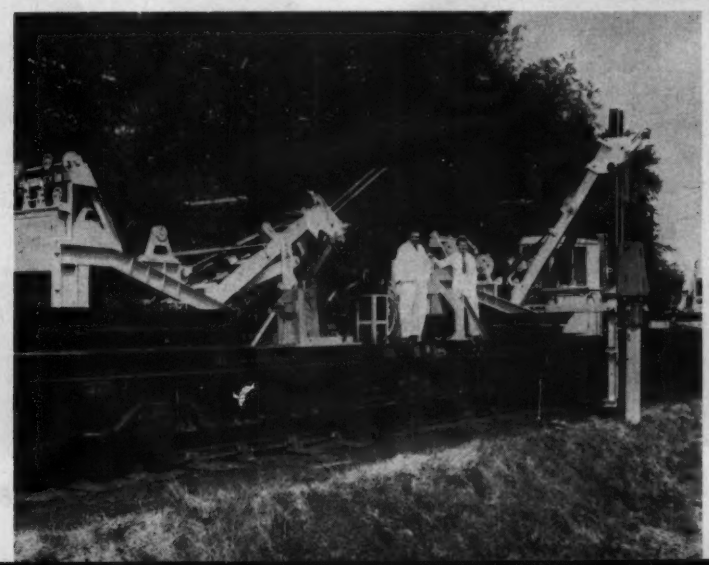


In India

Indian workers carrying concrete in head baskets form an uninterrupted pouring line in construction of aluminum reduction plant at Renukoot, near Pipri, State of Uttar Pradesh. Kaiser Aluminum & Chemical Corp., in a joint venture with Birla family enterprises, is constructing a production complex capable of a 20,000 metric ton per year output for Hindalco, Ltd.

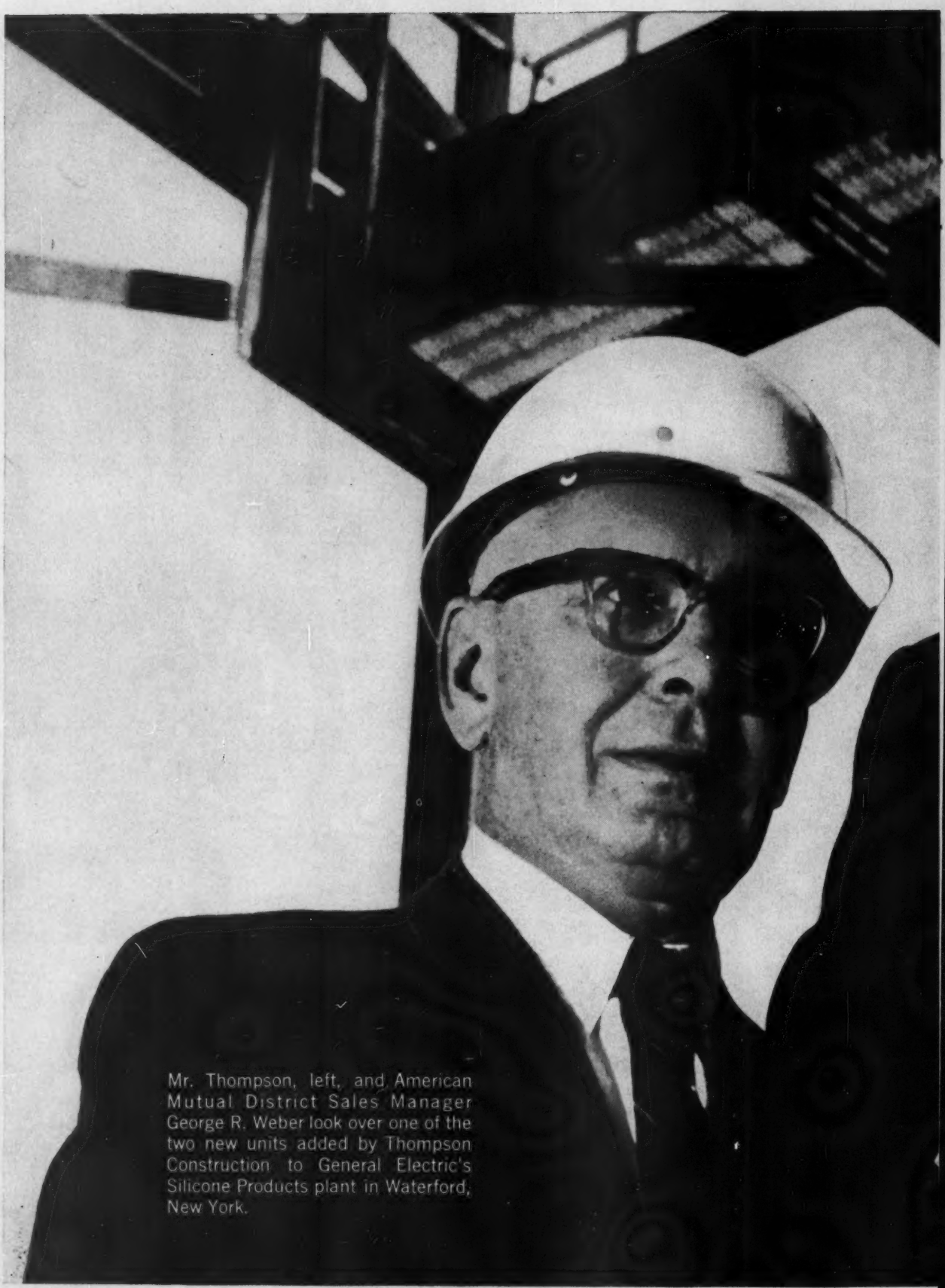
In New Zealand

The spillway block for an earthfill dam on the Waitaki River at South Island will be situated in a natural gully high on the left river bank. The concrete structure, 100 ft high, will contain four gates to control release of excess water from a 34-sq-mi lake that the dam will create. Benmore Dam will use 16 million cu yd of material. Clay and gravel for the core, 4½ million yd, are being taken from a borrow area 3 mi away by 15 International Payscrapers.



In Great Britain

A hydraulic piling machine mounted on a 46-ft-long flat car drives reinforced concrete piles along railroad embankments for the North Eastern Region of British Railways. The flat car carries two piling units, each with its own cab and operator. A central source drives two pumps which power the hydraulic motors. The new rig replaces a manually operated drop hammer to drive piling. Another car hauls and positions piles.



Mr. Thompson, left, and American Mutual District Sales Manager George R. Weber look over one of the two new units added by Thompson Construction to General Electric's Silicone Products plant in Waterford, New York.

"I like a man who sticks with the job"

John S. Thompson, President of The Thompson Construction Corp., General Contractors of Albany, N. Y., says, "George Weber of American Mutual covers all the bases. With his help, we've cut our Workmen's Compensation costs 19% below the industry average over the last five years."

There's an experienced insurance expert like George Weber near you. He'll show you how you can improve your coverage and lower your costs. His fully-staffed office is listed in the Yellow Pages.

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Circle 84 on Reader Service Card

Construction Methods AND EQUIPMENT

OCTOBER, 1961

VOLUME 43 • NUMBER 10

HENRY T. PEREZ, Editor

Money Thrown Away

IT WOULD NOT SEEM POSSIBLE for anyone connected with the construction industry to be unaware of the fierce competition for work that prevails today. And in the face of the reduced profit margins this competition has caused, it would seem reasonable to expect that contractors would do all in their power to trim their costs of operation. Yet too many outfits overlook one obvious path to cost reduction—accident prevention.

Alone, direct costs of accidents divert millions of dollars annually from contractors' pockets. And indirect costs average 4½ times as much as direct ones.

You pay a high price for idled men and equipment, disrupted work schedules, repair of damage, and such things. You'll also pay more for your insurance coverage.

How much better to make an investment in a safety program to prevent accidents and plug those unnecessary profit leaks. The dollar investment need not be large. But to be truly effective, a safety program requires time, follow-through, and constant vigilance at all levels of authority.

Accident prevention begins with the removal of all hazards possible. This is the simple part. More difficult is the job of alerting the men, and constantly re-alerting them, to those hazards that cannot be eliminated.

Accidents do not happen—they are caused. They are caused by men, usually through omission. And forgetting common, safe work practices takes a high toll.

Men become used to ordinary dangers and tend to ignore them. That old saying "Familiarity breeds contempt" was never more true than when applied to many construction workmen's attitude toward their working conditions. Well, it is the duty of construction management, from the foreman right on up to the top, to change that situation.

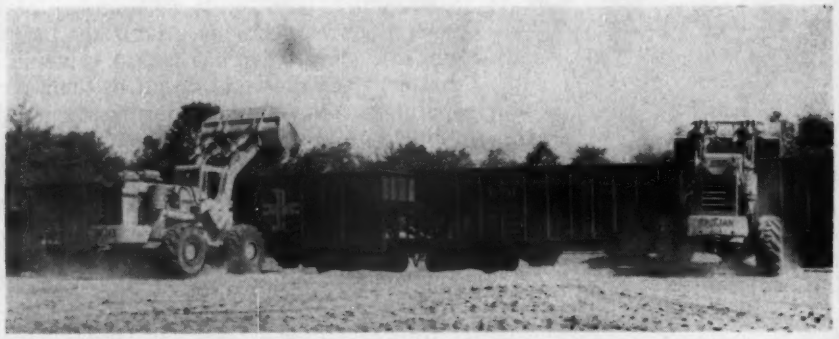
Here is where appeal to the man's self interest may pay off. Chances are he doesn't give a damn about the profits of the company he happens to be working for at the moment. He may not even care if his unsafe acts endanger his fellow workmen. He may be the lazy or daredevil type who ignores possible harm to himself. But he surely cares about his pocketbook—and compensation rates don't match construction wages by a long shot.

So keep your men alerted and safe. Make the small investment that accident prevention requires. You'll reap the tangible benefits of decreased costs and avoid the intangible losses that accidents cause through unfavorable publicity for you and your client.

Want to learn the latest accident prevention techniques? Attend the Construction Sessions of the National Safety Congress, Conrad Hilton Hotel, Chicago, October 16-18.

Trains Move Earth 70 Miles For Highway Fill in River

WORKHORSES — Two Trojan 404 tractor shovels excavate sand to get fill for the road.



EARTHMOVERS—The tractor shovels load 55 yd of dirt into each rail car for shipment to the job site. It takes 8 min for each rig to load one of the 52 cars in a train.

To get 3 million yd of fill material for an Interstate Highway project, the contractor is excavating a hill in New Hampshire and shipping it by train to the job site in Massachusetts. And to make room for the road, he must relocate a river.

HAUL DISTANCE on this highway project is 70 mi. There's no fill material at the job site near Boston and the contractor must bring in dirt by rail from a pit in New Hampshire.

The job requires nearly 3 million yd of fill for the roadway. To make room for it, the contractor must relocate a section of the Mystic River and remove 1½ million yd of unusable salt water peat. Two dredges handle the peat removal.

Marinucci Bros. & Co., Inc., of Boston is the contractor on the $8.7-million project. It includes construction of 5,000 ft of eight-lane Interstate Route 93, an interchange, and relocation of a parkway and the river section.

Earthmoving for the fill starts at Madbury, N.H., about 70 rail miles from the job site. Here, Marinucci bought a sand and gravel pit containing large deposits of glacial material that is suitable for fill without screening or grading.

The pit, previously used by the Boston & Maine Railway, has a railroad spur leading up to it. The pit is crescent-shaped and the railroad tracks extend parallel to the face. They are shifted sideways from time to time as the face of the pit is moved ahead.

Each freight train consists of 40 to 52 cars that hold about 55 yd of dirt each. The tracks along the pit are long enough to hold an entire train at one time so that no moving is needed to load it.

All loading is done by a pair of Trojan 404 tractor shovels that handle 5 yd at a time. It takes about 8 min for each rig to load one car. To insure continuous high production in case of a breakdown, Marinucci has a third 404 on the job as a spare. When extra production is needed, this rig also is put to work.

To cut down the loading cycle time as the face of the pit advances, Marinucci moves the rail tracks to keep them within about 50 ft of the face. The tractor shovels can load two to three trains per day, depending on the number of cars per train.

The Boston & Maine Railway hauls the dirt to an old railroad siding near one end of the job site. Here, the contractor built a dual unloading installation that handles two rail cars and loads two trucks at a time.

Each unloading system includes a 12x16-ft controlled-feed hopper installed under the railroad tracks. Cars are spotted over the hopper, and a Hewitt-Robbins car shakeout unit helps discharge the sand by vibrating each car. At the hopper below, a Synchron vibrating feeder delivers material to a Hewitt-Robbins 48-in.x100-ft belt conveyor that loads the trucks.

CONVEYORS LOAD TRUCKS—Dual unloading facility consists of car shakeout units, controlled feed hoppers, 100-ft conveyors.

Six Euclid rear dumps haul the dirt over an existing road to the fill area. Maximum haul distance is only ¾ mi. Short hauls could have been handled by conveyors, but Marinucci decided on the dump trucks because they compact the fill on their way to and from the unloading site. Also, spreading equipment is kept to a minimum.

With the dump trucks, only one dozer is needed to spread material. As a truck dumps its load, a LeTourneau-Westinghouse Model C Tournatractor levels it off so the next truck can get to the edge of the fill.

The sand has an average moisture content of 5%. The Eucs and the Tournatractor are producing better than the specified 90% compaction. After the top of the entire fill is above water, Marinucci will continue it by placing a 1-ft lift each week until the finished grade for the roadway is reached.

This will be possible only after the unusable peat is removed from the entire fill area. Peat removal was started in March with two 12-in. portable hydraulic dredges built by the Ellicott Machine Corp. of Baltimore. Marinucci purchased the Dragon model dredges especially for this project and formed a separate marine division. It will handle other marine construction projects.

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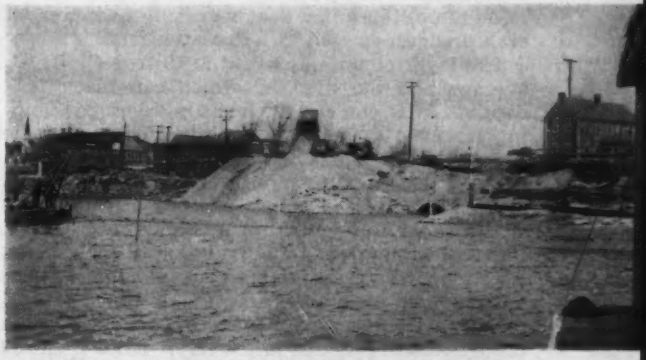
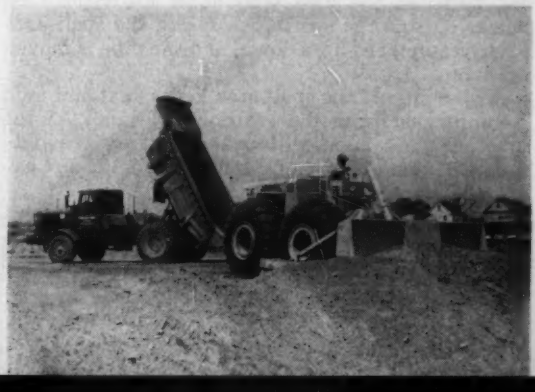




TRUCKS PLACE FILL—Euclid rear dumps discharge sand at the edge of the fill (above), and a LeTourneau-Westinghouse wheel dozer levels it (below). The trucks and dozer also compact the fill.

PEAT DIGGER—Ellicott hydraulic dredge, one of two on the job, excavates unusuable salt water peat to a depth of 19 ft below the water level. The 12-in.-dia discharge line consists of spirally reinforced pipe that carries peat 3,000 ft to spoil area.

INTAKE—Dredge removes peat island in river as part of the 1½-million-yd dredging job. The dredge can dig to a depth of 27 ft.

DISCHARGE—Peat is dumped in spoil area surrounded by a dike. The pipe is shifted from place to place to spread the waste.

The dredges work three shifts a day, six days a week. Each dredging crew consists of three men. In addition, there is a boat man and a captain for both dredges, as well as a dredging foreman.

The layer of unusable peat is 19 ft deep on the average and the dredges, which can reach to a depth of 27 ft, can remove it easily. Average pumping distance to the spoil areas is 2,000 ft and the maximum distance is 3,000 ft.

The dredges are removing peat and other alluvial materials along the banks and bed of the Mystic River, as well as several peat islands in the river. Material is pumped to the spoil area through 12-in. lines made of spirally reinforced steel pipe sections with tapered ends.

Discharge lines are extended or shortened as the dredges make progress in the river. When material in one part of the spoil area piles up too high, the discharge line is moved to a new location. A Gradall, which handles many digging jobs on the project, positions the pipe sections or loads them on trucks outside the spoil area. Inside the spoil area heavy equipment bogs down, and the pipe is moved by hand.

A dike around the spoil area keeps peat and mud from flowing over the surrounding land. As the level of peat rises within the dike, a crawler-mounted Lima clamshell builds it up with dirt excavated next to the dike.

In areas where dredging operations are completed, the contractor is placing sand fill for the roadbed and constructing piers for bridges and overpasses. Pile driving for pier foundations is subcontracted to W. P. Carter of Natick, Mass.

To simplify pier construction in the fill areas, Marinucci is planning for them during the filling operations. Because the pier foundations will extend below the level of the fill and the water, the contractor is leaving unfilled lagoons at the pier locations. Later, these will be pumped out, and the surrounding fill will serve as a dike to keep out water. In this way, Marinucci hopes to avoid driving sheet piles for cofferdams.

In addition to placing fill for the roadbed, Marinucci must relocate many existing utilities and enclose a creek in a pipe. Enclosing the creek is especially difficult because the reinforced concrete pipe is 102 in. in dia and dewatering is necessary during its installation. A Moretrench pump takes care of the dewatering, and a crawler-mounted 820 Lorain clamshell excavates the creek bottom.

Because the various operations are going on simultaneously, Marinucci is using two-way Motorola and GE radios for communications on the job. There is a radio on each dredge, at the unloading site, at the field office, and in trucks and cars.

Project engineer for Marinucci Bros. & Co., Inc., is Bert Ciampa, and superintendent is Frank Gitto. Tony Pacella is dredging foreman. Resident engineer for the Massachusetts Dept. of Public Works is Arthur P. Rich.

Completion of earthmoving is scheduled for June 1962, and the target date for opening the road is June 1963.

Erectors Match Fast Pace Of Speedy Casting Yard Crew

A tight schedule and a confined casting yard called for fast stripping and a minimum of forms on this job. High-strength concrete, polyethylene curing blankets and a form stripping compound enabled the contractor to erect precast bents and shells just 48 hr after pouring them.

By B. E. BARNES
McGraw-Hill News Bureau,
Atlanta

ASSIGNMENT: form, pour, strip, move, and erect 24 concrete bents and 40 canopy shells, each weighing 4 tons, on a crowded airport site in just 90 days.

That was the job Charlotte contractor Thompson & Street Co. tackled after they won a $175,000 contract for construction of a filling station at Atlanta Municipal Airport. An assembly-line production scheme that featured a fast pouring-stripping sequence enabled them to meet the tight schedule.

Four rows of Y-shaped precast concrete bents form the structural frame of the filling station. Each pair of bents holds two 15x15-ft precast canopy shells. The shells at the edge of the roof have an additional convex lip that protrudes 2 ft beyond the bents. Thickness of each shell is 3 in.

Over-all height of each bent is 11 ft. The stem of each increases in width from 18 in. at the bottom to 32 in. at the point where the curved arms branch from the upright. Thickness is a uniform 12 in.

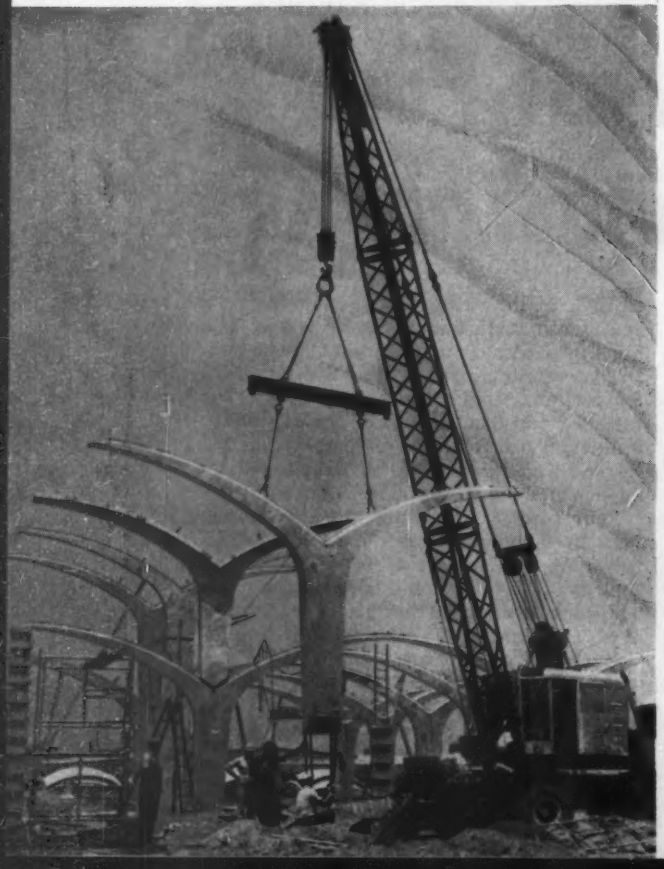
continued on next page

Bents Are Born And Go Up Fast

FORMING — Contractor built three bent forms in casting yard adjacent to site. Cast flat on ground, each bent takes 3 yd of high-strength concrete.

STRIPPING—Crane with 10-ft-long H-beam spreader breaks bent loose from form after it has cured 48 hr under a polyethylene cover. A form stripping compound eliminates rubbing.

ERECTING — Lorain truck crane spots bent over bell caisson in which dowels at bottom will be embedded. Angle irons bolted to sides of bent stem will hold unit over 3-ft-deep hole.



Thompson & Street first made three bent forms in a casting yard at the site. Bents were cast flat on the ground. Bottom and sides of each form were made of double ¾-in. plywood.

After steelworkers placed reinforcing, the contractor poured a bent with 3 yd of transit-mix concrete. The 6½-bag mix provided extra cement for pick-up strength. Bents cured for only 48 hr under a polyethylene cover.

A 35-ton Lorain Moto-Crane with a 50-ft boom broke each bent out of its form after the curing period. The crane handled the bents with a special sling hooked to two lifting inserts cast in the arms of each bent. The sling consisted of a 10-ft-long steel H-beam suspended from the crane hook by two 4-ft cables. It held two 5-ft pick-up cables.

To pick up a bent without damaging the 3-ft-long dowels projecting from the bottom of the stem, the contractor dug a hole at the stem end of each form. The crane picked up the bent at the other end with the job-built sling, holding the bottom of the bent over the hole with a cable anchored to its frame.

Casting of bents started four weeks before erection began. In that time the crew got 18 bents ahead, and the contactor faced a storage problem. The bents would have taken too much space laid flat in the yard. And the dowels projecting from the bottom of each bent upright might have been damaged if bents were stacked atop one another.

Thompson & Street solved the problem with a storage rack made of two timber A-frames. The two legs of each A-frame consisted of 14-ft-long 6x8's braced by 2x4's. An 8-ft-long 4x6 spanned between the legs to complete each A-frame.

The contractor placed the A-frames about 14 ft apart to make a cradle for the Y-shaped bents. To anchor the rack against side movement, a crew nailed 4x6 tiebacks to the back of each frame and anchored them in the ground.

The A-frames held 20 bents at one time. A crane eased each bent into position between the A-frames, spotting the four steel dowels at its bottom over a hole dug in the ground. Then the crew placed a 4x6 block under the bent and installed wedges to take the weight of the bent.

As bent erection caught up with casting output, the Lorain truck crane carried bents directly from the casting yard to the station site—a distance of about 800 ft.

It took about 35 min to erect a bent: 15 min for positioning, 10 min for leveling, and another 10 min for concreting the bent to its footing.

Footings are 10-ft-deep bell caissons poured to within 3 ft of ground level. When a bent reached

Shells, Too, Are Made in a Hurry

FORMING — Double ⅜-in. plywood atop timber trusses forms 15x15-ft canopy shells. Local fabricator made supporting trusses for casting yard crew.

the erection site, the crane dangled it over this hole until the four bottom dowels extended into it.

For leveling, the crew attached a 6-in. angle iron 4 ft long to each side of the stem at the bottom of the bent. The angle irons slipped into two lifting inserts cast in each side of the bent stem. Workmen blocked under the angle irons to hold the bent. When the bent was wedged at proper grade, the crew shored it with Medco adjustable braces. Then a transit-mix truck poured about 1 yd of concrete to embed the dowels in the top of the bell caisson.

In the meantime, Thompson & Street got a good start on casting the canopy shells. Forms were made of double ⅜-in. plywood supported by bowstring trusses made of 2x6's and 2x4's. The trusses were made by a local firm, thus saving form-building time for the casting-yard crew.

When casting both bents and shells, the crew treated forms with Techkote, a separating compound developed by American-Marietta Co. The contractor claims it eliminated the need for rubbing bent and shell concrete.

It took about 30 min to pour a shell. Concrete was chuted directly from transit-mix trucks into the forms. Then crews vibrated the concrete with a Mall vibrator driven by a ¾-hp gasoline engine.

After curing for 48 hr under a polyethylene cover, the shells were broken from the forms by the Lorain truck crane equipped with a special job-built pick-up rig. The backbone of the pick-up rig was the same 10-ft-long H-beam used to erect the bents.

But this time it was rigged differently. Suspended from the H-beam were two 4-in. H-beams 8 ft long. Each of these smaller beams had a 2-ton chain hoist at one end and a ¾-in. steel cable at the other end. Hooks at these four lifting points connected to four swivel plates anchored in the shell concrete with coil inserts made by Meadow Steel Products, Inc. of Birmingham.

Shells traveled from casting yard to erection site by truck crane. The crane positioned each shell over its supporting bents and lowered it to within a few inches of final grade. Then the crew lowered it into final position with the chain hoists.

When storing shells for later erection, a crane stacked them atop one another. Bottom shells rested on wood trusses like those used to support shell forms. Stacked shells were separated by 1x4-in. wood strips.

Project manager for Thompson & Street is Frank MacConochie. Job superintendent is Floyd Wheeler. Tomberlin-Sheetz of Atlanta are the architects. Chastain & Tindel, Inc., also of Atlanta, are consulting engineers.

POURING—Crew pours 3-in.-thick shells with transit-mix concrete in about 30 min. After 48-hr curing period, shells are stacked atop trusses like those that support forms until erection.

ERECTING—Crane erects 4-ton shell with job-built sling made of 10-ft H-beam that holds two 8-ft spreaders. Chain hoist at one end of each spreader lowers shell into final position.

Contractors Turn Swamp Into

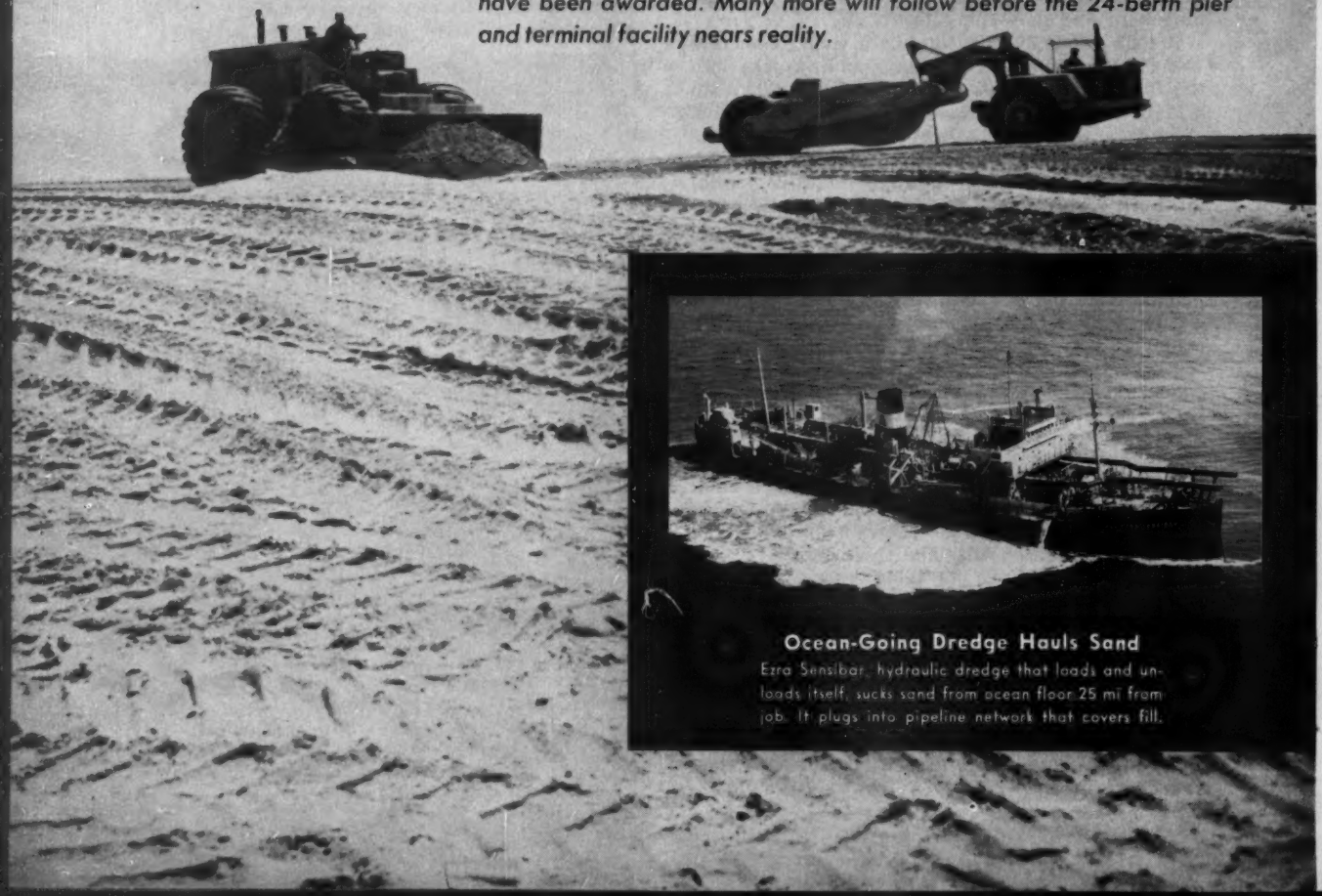
One of the East Coast's most formidable tidal meadowlands is seething with activity as contractors work to transform the huge swamp into a $150-million marine terminal.

While dredges blanket the 700-acre site on New Jersey's Newark Bay with beach sand, earthmoving rigs slog through the sugary fill to build and move surcharges. Wharf builders, forced by the site's inaccessibility to operate entirely from water, fight tides that flood their work areas twice a day.

Only a few years ago, the area was a useless marsh that was kept well-lubricated by a meandering tidal stream. Today, the stream has been replaced by the Elizabeth Channel, a 9,000-ft-long navigation strip 800 ft wide and 35 ft deep. More than 14,000,000 yd of material were dredged from the channel.

The soil profile of the terminal site is fairly uniform. A 15 to 20-ft top layer of black river silt and muck is underlain by a 20 to 60-ft stratum of hard red clay. Under the clay is soft, and then hard, shale.

The Elizabeth-Port Authority Pier project is sponsored by the Port of New York Authority. Ten major contracts totalling $15 million already have been awarded. Many more will follow before the 24-berth pier and terminal facility nears reality.



Ocean-Going Dredge Hauls Sand

Ezra Sensibar, hydraulic dredge that loads and unloads itself, sucks sand from ocean floor 25 mi from job. It plugs into pipeline network that covers fill.

$150-Million Marine Terminal

SAND IS THE KEY to progress on the Port of New York Authority's Newark Bay pier development project.

Sand must be dredged, hauled to the site, placed hydraulically, built into surcharges, transplanted by scrapers, injected vertically to create sand drains, compacted to support structures, laid atop wharves to serve as loading docks, and handled over and over again to consolidate the 700-acre site.

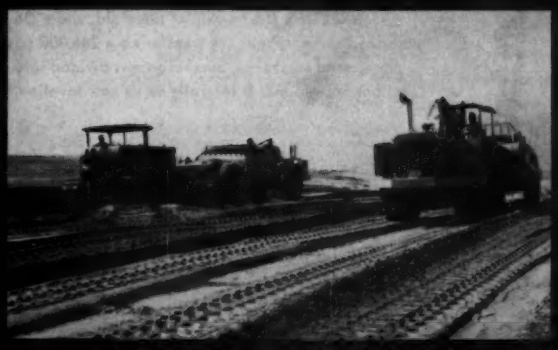
The job of supplying more than 4,500,000 yd of sand for the project's first-stage construction is being carried out by Construction Aggregates Corp. of Chicago under a $5 million contract.

Following hopper-dredge methods proved locally during construction of Port Newark, the N. J. Turnpike, and Newark Airport, the contractor now is well beyond the half-way mark.

CAC's dredge, the Ezra Sensibar, has handled all of the Port Newark work. An ocean-going hopper dredge that loads and unloads itself, the Ezra Sensibar has a capacity of more than 4,000 yds.

It plies the 25 mi between the Elizabeth channel and a shoal 3-mi off Coney Island, N. Y., the contractor's primary source of good quality beach sand. There, the rig lowers its two overboard suction drags, vacuums sand from the ocean floor, and flumes it into the ship's holds. The fluming process screens coarse and foreign materials, and also washes fines out with the overflow.

When filled, the big hopper dredge returns to the job site where it plugs into the end of a pipeline network covering the fill area. A seacock is opened to admit water to the ship's holds, and



Scrapers Transfer Sand 'Slabs'

A 246,000-yd 'slab' of sand surcharge is moved in sections a distance of 500 ft by scrapers to speed the consolidation of soil under new warehouse sites.

It Takes a Navy to Build Wharfs

Because the site is inaccessible from land, contractors building a mile of piers must mount equipment, materials, and shops on barges and special floats.

Scrapers Transfer Big Sand Surcharge

SPECIAL DELIVERY—Hopper dredge ties up to an anchored railroad car float and is plugged into a pipeline network that distributes sand fill over the 700-acre marine terminal site.

FROM SWAMP TO TERMINAL...

continued

pumps empty the vessel of sand at the rate of about 1000 yds per hr.

On the fill, dozers build dikes and move pipeline sections as required to contain the sand fill without interrupting pumping. The contractor has standardized on Armco special alloy dredge pipe to carry the abrasive slurry.

Moving Surcharges

The job of making the first of many future surcharge transplantations went to Hess Brothers, Inc., of Parling, N. J. Hess moved a 246,000-yd "slab" of sand surcharge about 500 ft laterally to accelerate the consolidation of soil under new warehouse sites. The surcharge was 380 ft wide, 13 ft high, and 1550 ft long.

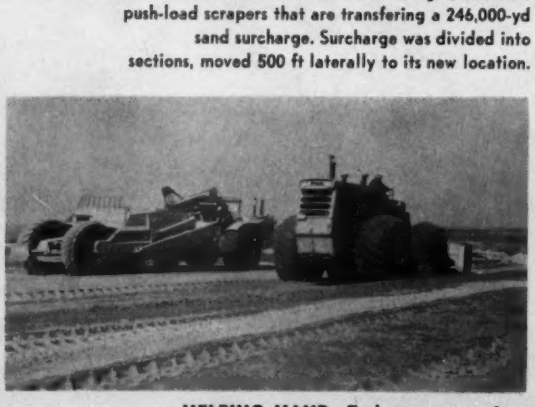
To meet a tight two-month schedule, Hess attacked the surcharge with a fleet of six Cat DW21 scrapers and three pushers—a Cat D9, Cat D8 and an Allis-Chalmers HD21. For top efficiency, the contractor moved the slab of sand by transplanting one section at a time to its identical position in the new surcharge. Average one-way haul was 600 ft.

Each section was about half the width of the surcharge, or 190 ft, and several hundred feet long. Work started at the southeast corner section and advanced, one section at a time, until the entire right half of the surcharge had been moved. Then the operation was repeated on the opposite half.

To speed hauling, dozers cut ramps at each section to enable scrapers to move on and off cuts and fills.

Hess' chief problem, however, was the sugary consistency of the beach sand. Maneuvering was tough enough in cuts, but until the contractor found the right combination of methods and equipment, fills proved almost impassable.

MOVING DAY—A Cat D9, right, and a D8 push-load scrapers that are transfering a 246,000-yd sand surcharge. Surcharge was divided into sections, moved 500 ft laterally to its new location.



HELPING HAND—To keep scrapers from bogging down on the fill, material is spread in 2-in. lifts and then compacted immediately with the broad-base tires of a Michigan 380 dozer.

SAND DRAINS—Manitowoc 3000 carrying 600-cfm compressor is placing 40,000 lin ft of sand drains to speed soil consolidation. Sand skip is charged by a Pettibone-Mulliken loader.

FAST MOVER—Hess Brothers moved an average of 12,000 yd per 8-hr day with a fleet of six Cat DW-21 scrapers. The surcharge will be moved again to consolidate other sections.

Hess recognized immediately that he would have to maintain at least surface compaction on fills, or the DW21's would bog down and have to be pushed.

Hess' solution was simple—but effective: spread fill as thin as possible, usually in only 2-in. lifts, then hit it right away with the broad base rubber tires of a Michigan 380 dozer. The speed of the big dozer, both forward and reverse, made it possible to keep the fill compacted enough for the 21's to dump quickly and get away easily.

The scrapers worked across the fill with the Michigan always in the lead, compacting and blading in advance. The big dozer kept the spread area smooth, and always was available if a scraper got off course and had to be pushed on its way.

With the fill problem solved, Hess quickly upped production to 12,000 yd per 8-hr day, and maintained it for the duration of the job.

When all of the surcharge was moved, the earthmoving fleet turned to the job of spreading 86,000 yd of sand fill on top of the new wharf and compacting it with a Vibro-Plus roller puller by a Cat D4. Eventually, this 6-ft-thick layer of sand will be paved and railroad tracks will be built on top of it.

Sand Drains a Must

In areas where soil consolidation must be accelerated to meet tight terminal deadlines, Port Authority engineers require the installation of vertical sand drains.

Currently, Edward O. Wickberg Co., Perth Amboy, N. J., is installing 40,000 lin ft of drains averaging 25 ft deep. The 14-in-dia drains, spaced 10 ft apart, are being driven at rates up to 80 per 8-hr day. Wickberg's rig is a Manitowoc 3000 with a Worthington 600-cfm compressor mounted on the rear. A Vulcan No. 1 hammer drives the sand drain casings, and a Pettibone-Mulliken loader charges the sand skip.

continued on next page

Floats and Barges Haul Everything

HORN'S NAVY—To build 3,320 lin ft of wharf, the contractor had to assemble a small flotilla to carry every piece of equipment and material needed. The wharf consists of a 45-ft-wide concrete deck supported on 4,000 65-ft-long timber piles.

FROM SWAMP TO TERMINAL . . .

continued

Building nearly a mile of wharf in a remote area accessible only by water presents more than enough problems. But that was only the beginning for Horn Construction Co. on its $5 million job.

The contractor also had to contend with tides that submerged much of the work periodically; winter snows that could have cut off the supply of stone fill for underwater dikes, and limited work space that precluded stripping of bottom forms. Horn's solutions to these problems show considerable ingenuity.

The job called for construction of more than 3,320 lin ft of wharf—800 ft along the head of the Elizabeth Channel and 2,500 ft along the channel's south side.

The structure consists of a 45-ft-wide reinforced concrete deck supported on timber piles—some are creosoted and the remainder are Greenheart. Piles average 65 ft in length, and were driven to rock to provide 25-ton bearing capacity.

Bents of 10 piles each are spaced on 8-ft centers. They were capped with concrete and covered with an 11½-in.-thick deck. A stone fill dike placed just after pile driving stabilized the wharf.

Horn's first major operation was mobilizing an unusually large fleet of floating cranes and work barges. Because the site was in the middle of the marsh, virtually all major work had to be done on water. This included form construction and handling, dumping stone fill, fabricating reinforcing cages, placing concrete, and stripping forms.

To meet the tight schedule, Horn assembled a fleet of ten floating cranes, four railroad car floats, and six scows for transporting stone fill. The contractor also built a dock and rehandling station on the north side of the channel. Here, piles, lumber, reinforcing steel, hardware, fuel and other items were loaded onto barges and shipped across the channel to the job site.

To drive more than 4,000 piles, Horn assigned three barge-mounted rigs—a Manitowoc 3500, Lima 800 and Bucyrus-Erie 51B. They drove creosoted piles with a McKiernan-Terry 10B3 hammer and the Greenheart piles with a Vulcan No. 1. All three rigs mounted 100-ft leads.

To spot piles quickly and easily in open water, Horn first ran two survey lines on shore parallel to the wharf. One line was at the edge of the marsh, about 130 ft from the edge of the wharf, and the other was on more stable ground about 500 ft away.

The method was simple. A transitman set up along the 500-ft line and shot through the inner line to establish the position of each bent. At the same time, a man in a row boat held a marked chain attached to the 130-ft line. When the marked chain was lined up by the transitman, a foreman located each pile exactly.

After being driven, piles were cut off to grade, except those in the outer rows on each side of the wharf. The outboard row was left up to serve as a temporary fender system, and the inboard row was left to anchor a wood sheet pile wall during subsequent construction of underwater stone dikes.

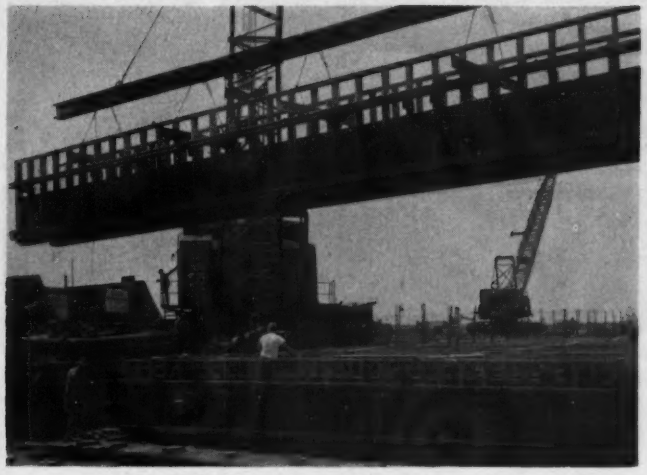
Bents were fitted with 3x8 stay lathing on each side, then covered temporarily with 24-in. wide steel beams to prevent damage to piles and stay lathing during stone filling.

Underwater Dikes

To retain the sand fill, and to eliminate the need for lateral batter piles, PA engineers called for a stone dike to be built around piles for the full length of the wharf. The job required about 400,000 yd of stone in two sizes: a 6-in. maximum for the dike and 3-in. stone for a 3-ft filter blanket.

Stone was quarried from a rock outcropping

PILE DRIVING—Three barge-mounted rigs, including the Lima with McKiernan-Terry hammer shown above, drove creosoted timber and Greenheart piles to 25-ton bearing capacity.



FAST FORMING—Because tides rose above piles, Horn torch-cut Granco metal sheeting to fit around piles and nailed it to stay lathing. This speeded cap form construction.

TOUGH POUR—Concrete placement was complicated by the location of the structure. Finger ramps were built up on the marsh to allow ready-mix trucks to feed the crane buckets.

about 12 mi from the construction site. Instead of processing the blasted rock at the quarry, the contractor saved time and money by setting up a crusher on the north side of the Elizabeth Channel. A conveyor system carried crushed stone directly to scows, eliminating costly rehandling.

A fleet of twenty trucks hauled blasted rock from the quarry and dumped directly into the crusher, or on to adjoining stockpiles. In bad weather, when quarry operations were suspended or trucks could not make the haul, the crusher was fed from the stockpiles and the dike operation continued without interruption.

A Lippman 32x40 jaw crusher processed about 400 tons of rock per hr. It was carried on a 200-ft-long Lippman belt conveyor to 2000-ton-capacity scows.

The loaded scows were towed across the channel and unloaded by three barge-mounted rigs—two Manitowoc 3900's and one Lima 1250, all equipped with Owen 3-yd clamshell buckets. The dike was built up in several passes.

While stone dumping was under way, Horn built a permanent retaining wall of treated wood sheet piling along the inboard edge of the wharf. The problem was to stabilize it so it would not be pushed out of line by the rising dike of stone, which was designed to envelope it.

Horn's solution was to leave the inboard row of piles high so that the retaining wall could be anchored against it. Then, when the dike was completed, the wall stood by itself and piles were cut off to grade.

Methods of building and placing cap and deck forms were influenced largely by the fact that tides rose well above the tops of piles. This presented several problems. It meant that all work had to be organized to shift back and forth between the structure and adjacent barges. It also meant that forms had to be designed for easy handling and fast construction. Bottom forms on both caps and deck had to be left in place because there was no room for stripping.

The fleet of railroad car floats provided the answer. They were moored alongside the wharf and offered adequate space for building and storing forms and fabricating reinforcing.

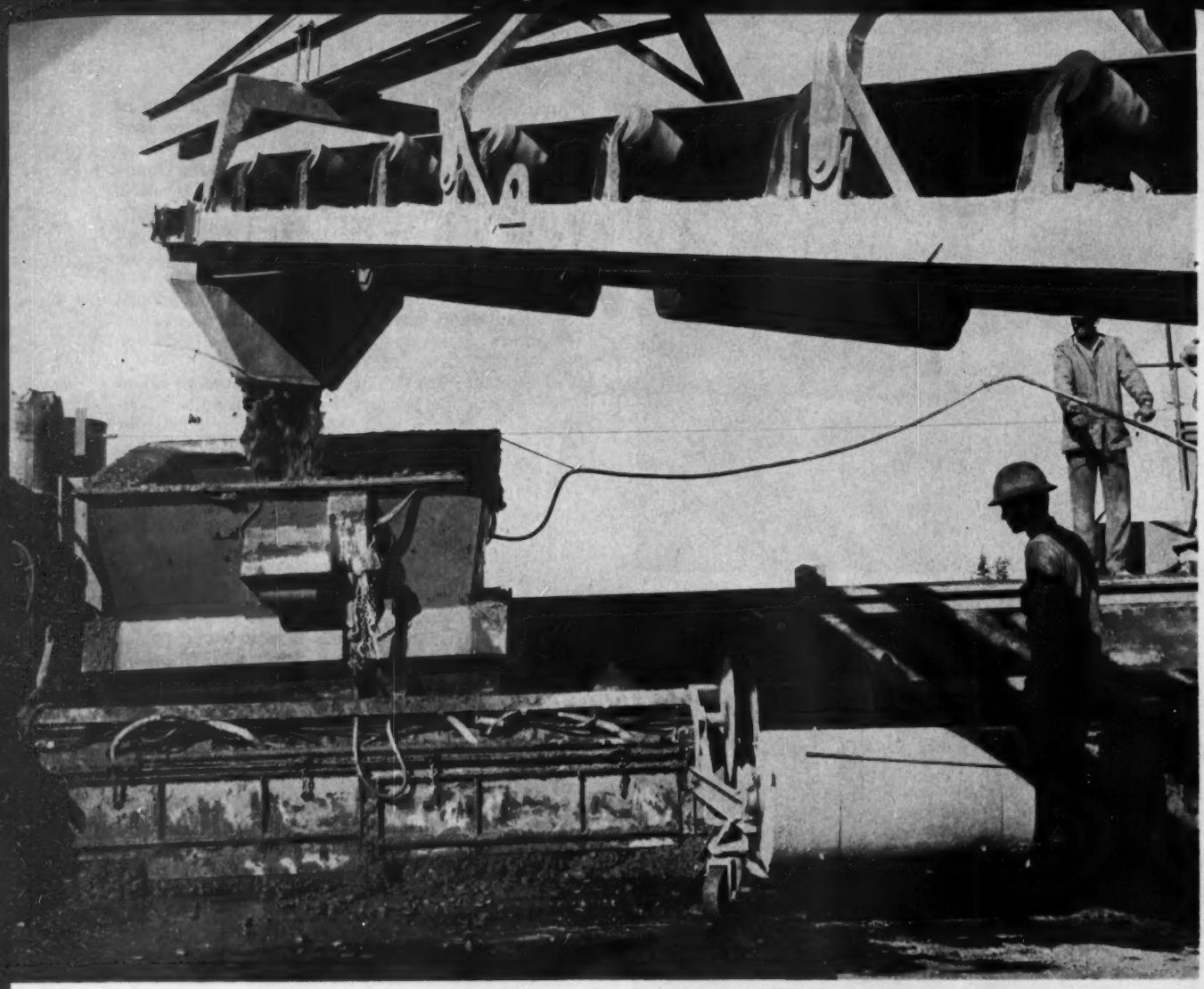
To speed form construction and eliminate stripping, Horn torch-cut Granco Corruform metal sheets to fit around piles and nailed them to stay lathing. The remainder of the cap form was completely prefabricated, including reinforcing cages. It was handled by means of a steel lifting beam and a series of steel channel pickup beams spaced laterally along the top of the form.

Deck construction also made use of Granco corrugated metal bottom forms, which span nearly 8 ft between concrete lips cast on to caps. Simple wood bulkheads were placed to complete the deck forms.

Horn's work on the 3,300 ft of wharf is now nearing completion, and construction of allied utility lines and facilities is well under way.

Men on the Job

For the Port of New York Authority, Herbert Frank is resident engineer and John Kyle is chief engineer. Nels Danielson is superintendent for Horn Construction, Kenneth Harris is project manager for Construction Aggregates, and E. R. Williams is superintendent for Hess Brothers.



DELIVERY—Concrete pours from conveyor belt mounted on mixer into the hopper of the slipform paver. Hopper travels back and forth over trough to spread concrete evenly.

Modified Slipform Paver

FOR THE FIRST TIME, a slipform paver has laid down a 36-ft concrete highway slab in one pass.

Gordon H. Ball, Inc., of Danville, Calif., figured that if its 24-ft slipform paver could successfully meet California's tough specs, it could be modified to pave 36-ft widths.

Despite strict surface smoothness specifications, slipform pavers have been laying 24-ft widths on California highway jobs for nearly 2 yr. Ball was one of the first contractors to use the technique (CM&E, Jan. '60, p. 82). But an increasing number of new freeways in the state have three 12-ft lanes in each direction.

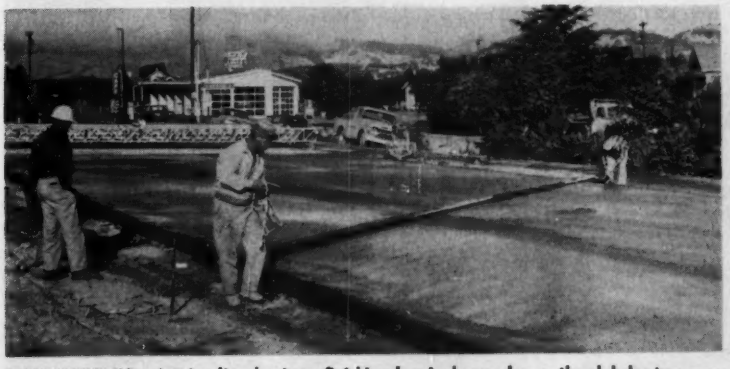
Ball recently won a job that offered a perfect opportunity to try out its modified 36-ft paver. The job was a 4½-mi section of Interstate 80 near Fairfield that had to be widened from four lanes into a six-lane freeway. And 10,000 ft of the 36-ft slab had to be paved from scratch.

A 10,000-ft stretch is hardly enough to justify the development of a radically modified machine. But Ball considered the job as a good laboratory.

Ball has owned a Guntert & Zimmerman slipform paver for several years. In addition to cutting the frame apart to widen the paver to 36 ft, the contractor has made many other modifications to increase production and to meet state smoothness specifications.

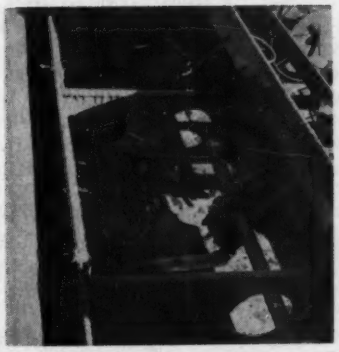
Alignment of the machine is controlled by limit-switch devices that operate on precisely set piano wires. The limit

MAKES JOINTS—Two vibrating plates on the paver cut longitudinal dummy joints in freshly poured concrete. Transverse joints still are cut conventionally with concrete saws.



FINISHING UP—A 5-in.-dia aluminum finishing bar is dragged over the slab by two men. Then, a burlap drag gantry, rear, is pulled over concrete to give it its final texture.

Lays 36-Ft Slab



VIBRATORS—McGinniss vibrators consolidate concrete, do away with side forms.

PLASTIC STRIPS—Drum feeds polyethylene strip into slab to form dummy joint.

switches, set in U-shaped probes that fit over the guide wires, automatically control both horizontal and vertical alignment.

Concrete mixers with elevating conveyor belts place concrete in a hopper on the paving machine. The hopper travels across a trough, which was lengthened when the paver frame was cut apart, to spread concrete evenly across the pavement width.

When Ball first bought the machine, the weight of the trough was used to consolidate concrete. Now, the rig is equipped with a series of McGinniss internal vibrators, and the depth of the trough has been reduced. The rear end of the trough still acts as a screed.

A rotating tube mounted near the rear edge of the machine provides additional concrete denseness. The tube turns in the opposite direction to the machine's travel.

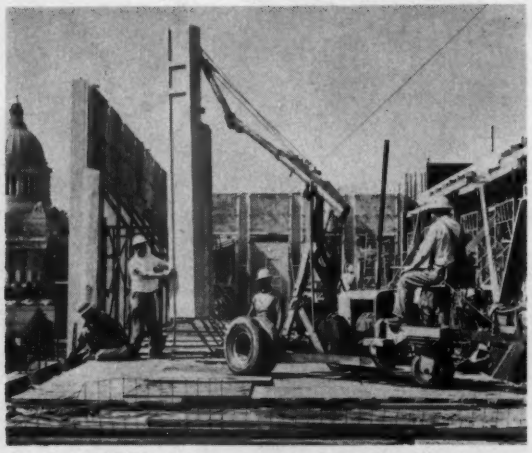
The original version of the machine had a set of trailing forms that hauled a V-shaped float and a burlap drag. Because the vibrators and screeds now give the concrete enough density in the 15-ft length of the paver, the forms have been removed.

To finish the pavement, workmen go over the surface with long floats. Then, a 5-in.-dia aluminum pipe float is dragged along the pavement surface at an angle by two men. Finally, a wheel-mounted burlap drag gantry is pushed along the pavement to give it its final texture.

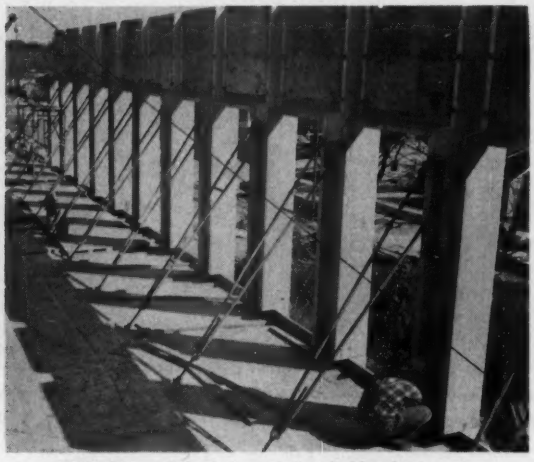
In the first version of the Guntert & Zimmerman slipform paver, tiebars for longitudinal joints were fed into the pavement by a drum device located just ahead of the trough. Now, another drum has been mounted on the paver to produce the two longitudinal joints that are needed in the 36-ft pavement.

The machine cuts its own longitudinal dummy joints by vibrating plates into the upper part of the fresh concrete. Ball has added a device that allows the vibrating plates to insert a continuous 2-in.-wide strip of thin polyethylene plastic into the pavement. Transverse joints still are cut with concrete saws.

On the Interstate 80 job, the 36-ft machine produced as much as 2,000 ft of pavement in an 8½-hr shift. The concrete was 8 in. thick in one 12-ft lane and 9 in. thick in the truck lanes.



JOB-BUILT RIG—Cherrypicker consists of steel A-frame mounted on rubber-tired carriage. Frame holds 12-ft-long boom and jib that erects units.



BRACES—Job-built braces that hold column units are twin 1⅛-in. pipes with turnbuckles at base and at top of one leg to provide fast adjustment.

Precast Units Act as Forms For Concrete

A job-built rig erects precast column and spandrel panels that serve as exterior forms for the concrete walls of an eight-story office building.

PRECAST COLUMN and spandrel panels serve as exterior forms for the concrete walls of an eight-story government office building in Olympia, Wash.

A subcontractor erects the 2-in.-thick facing elements with a special rig. Then crews install forms in back of the precast units and pour concrete to complete the walls of the building.

Developed by Mo Sai Institute engineers, the method offers a double-barreled advantage. It increases structural strength by making precast facing units an integral part of the structural concrete, and it reduces costs by minimizing external forms.

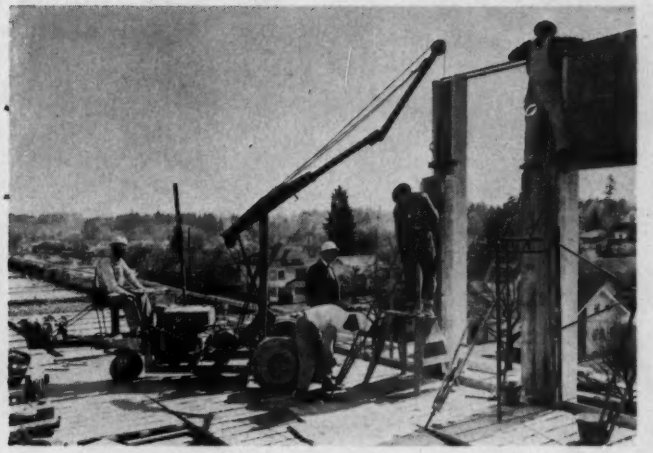
Olympian Stone Co. of Seattle supplied the precast Mo Sai exposed-aggregate panels. These are made of 7,500-psi concrete, in which is embedded heavy galvanized steel mesh. A mock-up section consisting of two columns and a spandrel was erected at the site to test the method before the job got underway. The unit proved capable of withstanding the hydrostatic pressure of pouring and vibrating concrete to the full 13-ft height of the columns in one pour.

Lloyd E. Beck Co. of Seattle handled erection of the panels for prime contractor Wick Construction Co. Beck first erected the precast column units, a floor at a time. These channel-shaped sections measure 1½x1 2/3 ft. Flat bar ties bolted to ½-in. threaded inserts cast in the column units splice them together at each end.

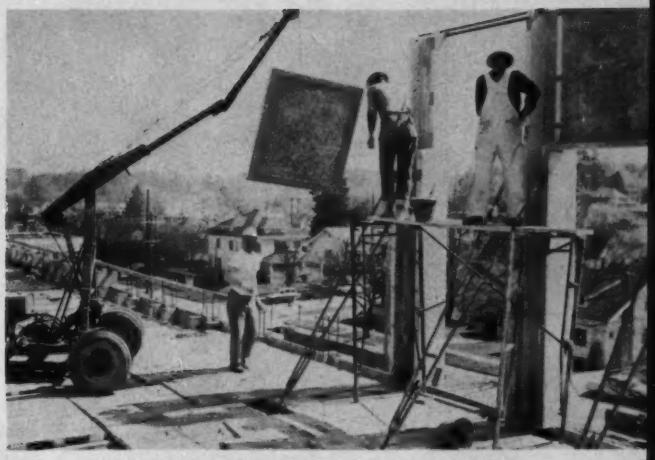
The column panels hold 4x6-ft spandrel panels. These are held in place between the columns by 6-in.-long, ¼x2-in. steel straps that are bolted to inserts.

Beck developed a special cherry-picker crane to erect the precast panels. A steel A-frame mounted on a rubber-tired carriage holds a 12-ft-long boom and jib. A 25-hp Wisconsin gasoline engine powers the rig.

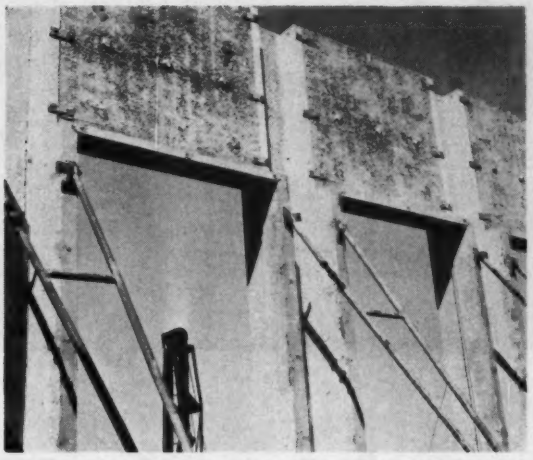
The rig's hydraulically operated drum holds 200 ft of cable so that it can lift units from street level. Its 2-ton capacity is more than ample for the 2,200-



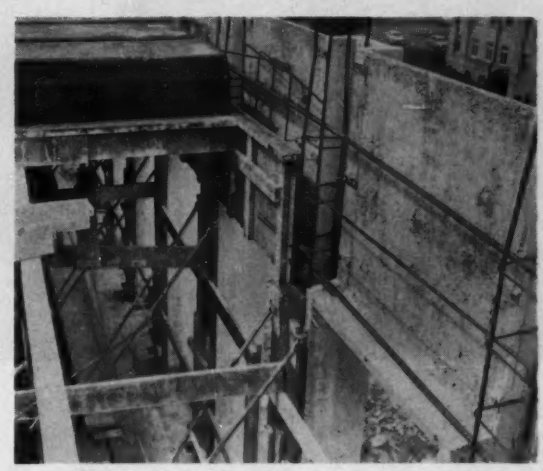
COLUMNS—Temporary clamp at top ties together 13-ft-high precast column units. Channel-shaped sections measure 18x20 in. and weigh 2,200 lb each.



SPANDRELS—Columns hold 4x6-ft spandrel panels by means of 6-in.-long steel straps bolted to threaded inserts cast in edges of precast panels.



TIES—Anchors cast in back of spandrel panels will hold ¼-in. snap ties that anchor interior forms backing up precast concrete wall panels.



FORMS—Plywood panels back up precast panels, and hold metal pans for floor slab. Contractor pours wall and floor concrete in three stages.

lb column units and the 800-lb spandrels. The rig cost about $1,500 to put together. It places the precast units at the rate of a floor every nine days.

Beck also devised adjustable braces to hold the column units. Each brace consists of two 12-ft-long, 1⅛-in. steel pipes linked by pipe struts. A turnbuckle at the base is used to plumb the column; another turnbuckle on one leg, close to the column, corrects any twisting.

At the base, a swivel plate permits the brace to rotate. The upper end of each leg connects to a swivel plate bolted to an insert cast in the column. This fitting includes a lip that later is wedged to hold back-up forms.

Afte erecting and plumbing the precast exterior facing elements, a crew mortars the joints between columns and spandrels to prevent concrete leakage. Then the subcontractor installs wood forms for the inner face of the columns and spandrels. The backup forms consist of 1⅛-in. plywood panels braced by 2x4's.

Bolts threaded into inserts in the precast facing units hold the column forms except at the top of the braces, where wedges secure the forms. Spandrel forms are held by ¼-in. snap ties that are screwed to strap anchors cast in the spandrel panels. Two timber walers back up each wood spandrel form. All concrete inserts and form hardware are supplied by Superior Concrete Accessories Co.

The contractor pours the walls on each floor in three stages. As soon as column units are erected and braced, a crew pours a concrete plinth at the base of each column. After backup forms are installed, the crew pour columns up to the spandrels. Later spandels and floor slabs are poured together. Specs call for 3,000-psi concrete.

Beck uses the same method to pour walls at the ends of the building, where ashlar panels enclose air intakes.

Architects Harmon, Pray & Detrich of Seattle estimate the cost of the building at only $20 per sq ft, thanks to the double-duty Mo Sai panels.

Fast-Moving Spreads Handle

TWIN-ENGINED SCRAPERS are the stars on a highway relocation project now underway near Concord, N.H. Besides moving nearly a million yards of material, one of the units is performing a job normally handled by trucks.

Instead of using several trucks to haul material from a crushing plant to a stockpile, Suburban Excavators, Inc., of Boston handles the job with a single Euclid TS-14 scraper.

During this operation, a belt conveyor loads crushed gravel into the 14-yd bowl of the scraper, which hauls it to the storage site. While the loaded scraper travels to the stockpile, the plant's conveyor continues to discharge gravel. The crushing plant runs continuously, and it has no storage hoppers.

On its way back to the crushing plant, the TS-14 simply lowers its bowl and scoops up the gravel from the ground. Then it positions itself under the conveyor and is filled to capacity.

To avoid being hit by flying gravel, the operator must maneuver carefully when positioning his scraper under the conveyor belt. He comes in at right angles to the belt and turns the tractor just before it reaches the stream of gravel. As soon as his seat is past the conveyor belt, he turns the tractor back, scooping up loose gravel and positioning the rig under the belt. Any spilled gravel is cleaned up when the plant shuts down in the evening.

Only one machine and one operator are needed for stockpiling. If dump trucks were used, it would take two or more of them to transport the material. Another important factor is that the 500-yd haul from the crushing plant to the stockpile is practically all up-hill. The twin-engined scraper has no trouble making the grade.

The gravel plant consists of two Cedarapids roll crushers and the necessary screens to produce 2½-in.-maximum material. The project requires 50,000

Scraper heads back to crushing plant after dumping gravel on stockpile. The gravel plant includes two roll crushers that are fed by a dragline and dozer.

Earth, Rock, and Gravel

yd of crushed gravel and an equal quantity of bank run.

The primary crusher, powered by a Caterpillar engine, reduces the boulders to a maximum size of 4 in. The secondary completes the crushing operation. Gravel that does not pass the 2½-in. screen is returned by conveyor to the primary crusher.

Another conveyor that discharges to the side from the secondary crusher carries excess fines from the crushed gravel. An Allis-Chalmers HD-5 tractor shovel piles the fines in a waste area. The gravel plant is charged by an American crane equipped with a dragline bucket. An International TD-24 dozer feeds the dragline.

On other parts of the $1.1-million, 3.2-mi project Suburban is drilling and blasting to remove rock ledges along the right-of-way. The shot rock is used for fills that are up to 65 ft high. Autocar trucks with Heil dump bodies haul the fill.

continued on next page

WORKS TWO WAYS—Euclid scraper scoops up gravel from the ground as it moves under conveyor that will finish filling the bowl.

BLASTHOLE DRILLING—A tractor-mounted Joy drill and two Gardner-Denver crawler drills prepare blastholes that are filled with a mixture of fertilizer and dynamite for blasting.

ROCK FILL—Autocar rear dump delivers shot rock to a 65-ft-high rock fill on the project.

FAST—MOVING SPREADS . . .

continued

AIR SUPPLIERS—Two compressors supply air to a 6-in.-dia pipe header that distributes it to the three drills and air-powered bit grinder.

A Northwest shovel loads the trucks, and a Caterpillar D8 tractor spreads the rocks on the fill. Suburban must remove a total of 90,000 yd of rock ledge. Of this, 80,000 yd goes into the fill.

Hemlock Construction Corp. of New York City, subcontractor on ledge removal, handles all blasthole drilling with air-powered drills. Two are Gardner-Denver crawler drills, and one is a Joy drill mounted on an old Allis-Chalmers tractor.

The drills work with Atlas Copco drill steels with 3-in. bits. Holes are drilled on a 7x7-ft pattern and loaded with a mixture of Hercules ammonium nitrate and 48% Hercules Gelamite. The proportion of dynamite in the loads ranges from 25 to 50%. Sand is used for stemming the holes.

Two air compressors power three drill rigs. One compressor is a 900-fm Gardner-Denver unit, the other is a 600-cfm Worthington. Air hoses from the two compressors are manifolded into a 6-in.-dia steel pipe header that supplies air to the drills.

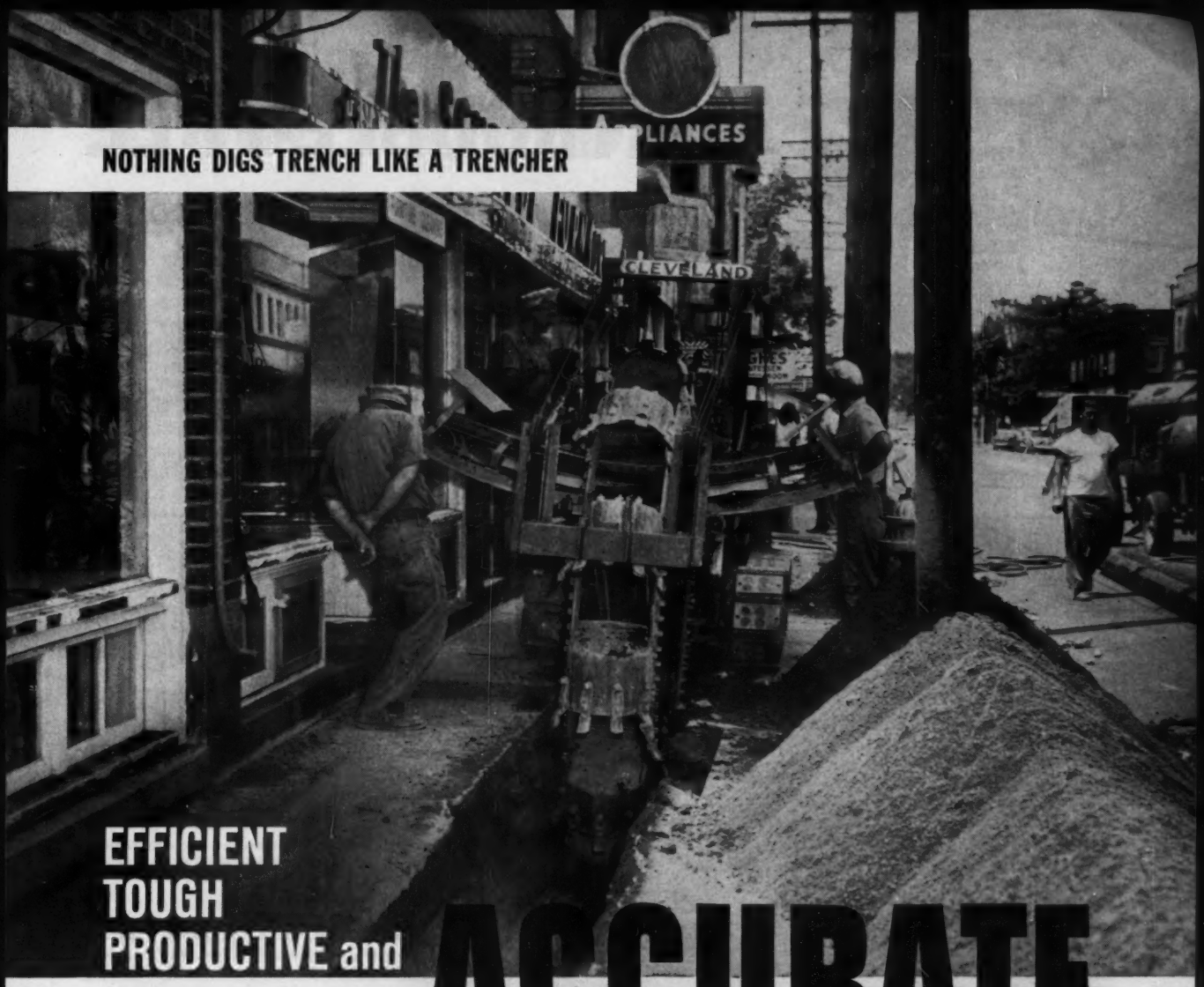
On other parts of the project Suburban is placing 600,000 yd of sand fill. This material goes on top of the rock fills and in embankments near bridge piers and around abutments.

In the borrow areas, a Michigan 280 wheel dozer push loads Euc scrapers. A Caterpillar No. 12 motor grader levels the material on the fill.

In addition to gravel production, ledge removal, and sand fill, the job includes 450,000 yd of common excavation.

After completing the earthwork, the contractor will place 11,000 tons of asphaltic concrete for the roadway. It will carry a section of U.S. Route 202 past a water reservoir that is being constructed for the Hopkinton-Everett Flood Control Project.

Superintendent for Suburban Excavators Inc. is Pete Elkins. Carl Thomas is superintendent for Hemlock Construction Corp. For the New Hampshire Dept. of Public Works the resident engineer is Ken Perkins, and George Hemmiz and Larry Reagan are assistant resident engineer.



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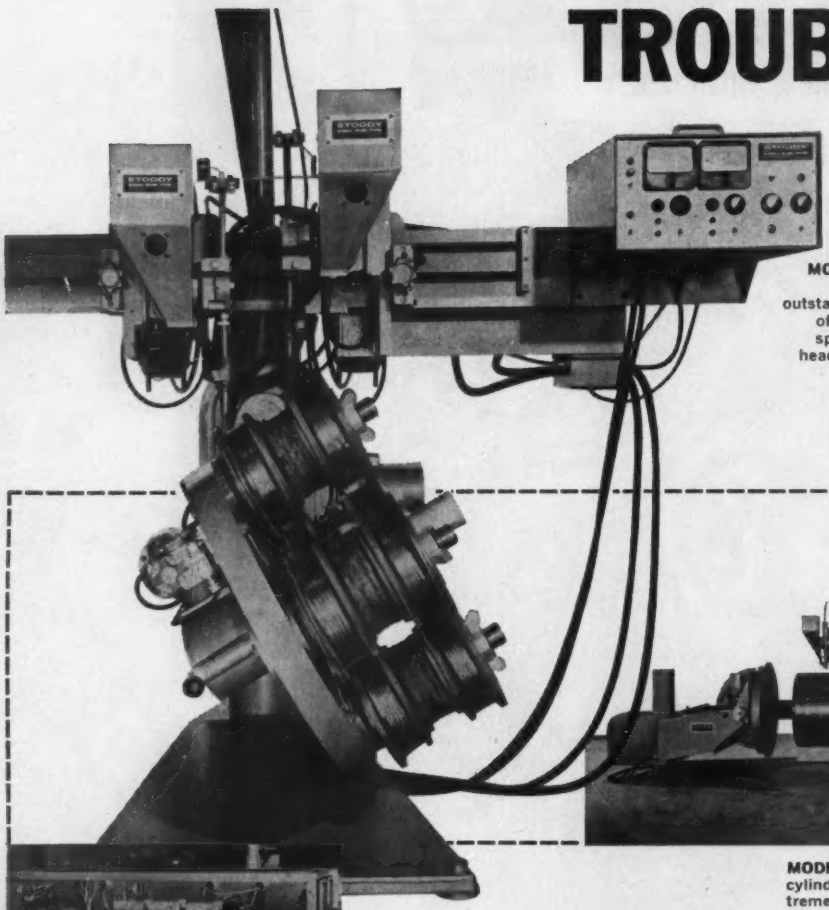
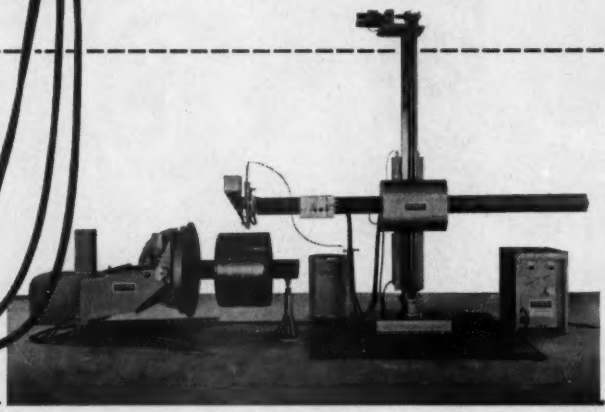
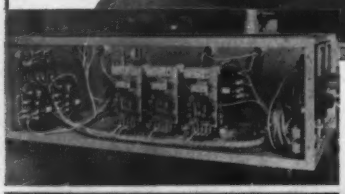
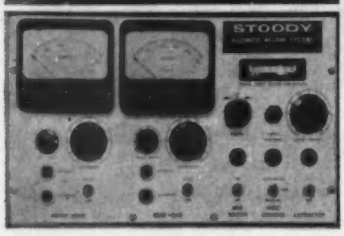


MODEL MR—a quality multi-spindle roller-idler rebuilding unit with outstanding operating features. Only Stoody offers a machine with offset main spindle support arm for minimum head adjustment from tread to flange.



MODEL UW—a universal automatic system for cylindrical, conical or straight line welding. Extremely versatile machine for small or large parts.





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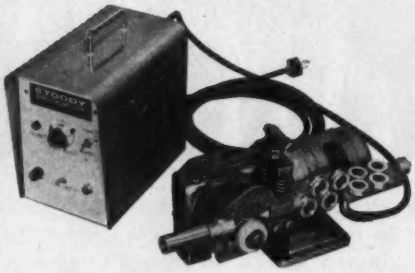

THE COLD WIRE FEEDER shown above replaced the weak link in an existing automated overlay operation. This is one example of the advanced components that can be designed and made to modify an inefficient, troublesome operation into a smooth-working, high production system.

STOODY AUTOMATIC WELDING SYSTEMS consist of a series of automatic machines and advanced electronic controls designed for heavy-duty rebuilding and hard-surfacing functions. The machines incorporate latest design features, are abundantly powered to provide uniform feed rates regardless of wire size and load, and are equipped with variable feed rates for any required welding speed. They handle everything from tractor rolls, track links and idlers to heavy shafts, trunnions, large rolls, roll and gyratory crushers, etc.

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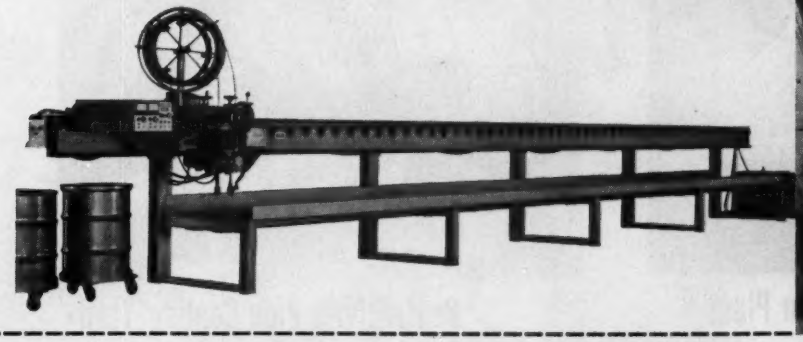
STOODY WELDING SYSTEMS

ALL Automatic Hard-Surfacing Overlay Applications!

Now Stoody, oldest name in hard-facing, offers an additional service to all automatic shops and rebuilders of heavy equipment... *a series of automatic welding machines designed for efficient, trouble-free performance!* Each machine performs specific functions on high volume operations. Construction is of highest quality—your assurance of long, uninterrupted service. For the first time, you can obtain both *machines* and *all hard-surfacing overlay requirements* from a single source, developed by a company whose name and reputation for quality has gained world-wide acceptance.

In addition, Stoody *will rework existing machines* to function with greater efficiency and minimum maintenance, and *will design specialized automation* for your specific needs, utilizing standard Stoody Automatic Welding System components.

To get more for your hard-facing and rebuilding dollar call STOODY—40 years specialization in hard-surfacing. There's a STOODY FIELD ENGINEER in each dealer's area qualified to help you. To arrange a personal call simply phone your nearest dealer.



MODEL TL—the only dual-headed track link rebuilder that guarantees machine-tool quality construction for accurate, sounder weld deposits. Entire operation is electronically controlled from columnized cabinet.

THE CRUSHERMATIC is the result of equipment development to solve a specific overlay problem ... this unit completely automates the rebuilding and hard-facing of crusher rolls.

TYPICAL APPLICATIONS

Trunnions are natural applications for Model UW which has a ram-type manipulator with a vertical travel from 6" to 8'-6" and a horizontal travel of 10'.

The efficiency of Model TL has revolutionized track link rebuilding. Several million pounds of Stoody 104 have been used on this proven application.

Substantial savings are realized by overlaying wear areas of high cost shafts... another profitable application for Model UW which will handle small or large diameters, short or long pieces.

Shovel rolls and idlers can be reclaimed at considerable savings with Stoody alloys... on completely automatic units like Model MR.

Circle 107 on Reader Service Card

In an ambitious plan to slake its thirst through the year 2,000, the City of Baltimore is tapping the Susquehanna River, 38 mi away. Part of the line is bell-and-spigot steel pipe 9 ft in dia. To install it, the contractor developed a number of unusual wrinkles.

Steel Fabrication Plant

To speed job-site work, reinforcing mesh for mortar coating is installed at pipe manufacturer's plant. Crimped longitudinal wires make the mesh self-furring, hold it ½ in. from wall of pipe as welder tacks it.

Contractor's Pipe Coating Yard

Truck crane with hydraulic outriggers quickly transfers 40-ft length of pipe from gondola car to dolly (right). Dolly will rotate pipe so 1-in. mortar coating can be gunned-on handily. Timbers elongate pipe's axis until in place and backfilled.

Heavy Coated Steel Pipeline

AVERAGING 50 FT OF PIPELINE construction per hour may not sound like fast progress. But when the pipe is 108 in. ID and weighs between 1,000 and 1,500 lb per lin ft as it goes into the ditch, it's another story.

C. J. Langenfelder & Son, Inc., is netting that on a 7-mi section of water supply line for its home town of Baltimore. Helping achieve that pace is bell and spigot steel pipe delivered in 40-ft lengths, with mesh already attached for a sprayed mortar covering. And the contractor has rigged up powered dollies that rotate the pipe so the mortar can be applied handily.

Bethlehem Steel Co. fabricates the 9-ft pipe, whose 14 different wall thicknesses range from ½ in. to 1 in., in its Steelton (Pa.) plant. There, the 9x40-ft sections are encased in self-furring, galvanized 2x4-12/12 welded wire mesh to reinforce the coating.

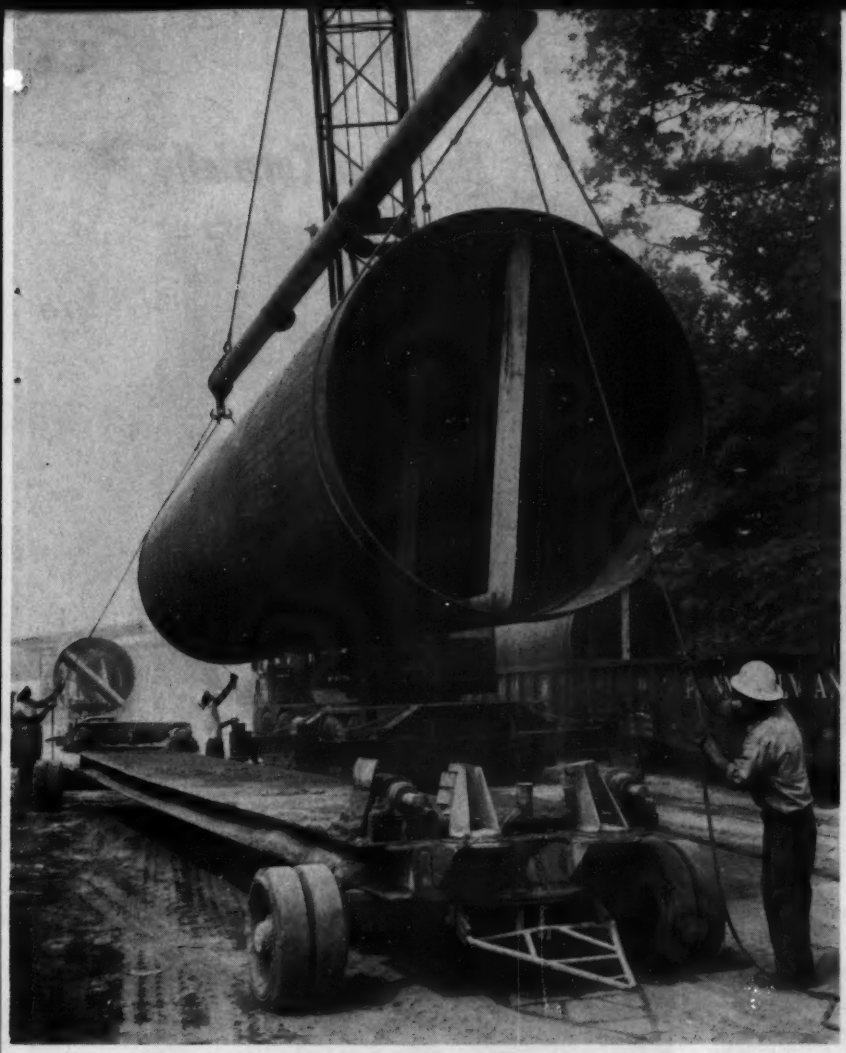
The plant receives the mesh in a 60-in. width in large rolls. To apply it, a roll is threaded over a horizontal spindle on a carrier that runs parallel to the pipe. The pipe itself rests on rollers that are powered to rotate it.

First, a welder tacks the edge of the mesh to the pipe. Then the pipe is rotated to pull the mesh from its roll and wrap it around the pipe, where it is tacked at intervals. When the circle is complete, the mesh is tack welded and cut free from the roll. The process is repeated along the pipe, with the mesh carrier moving in 60-in. steps.

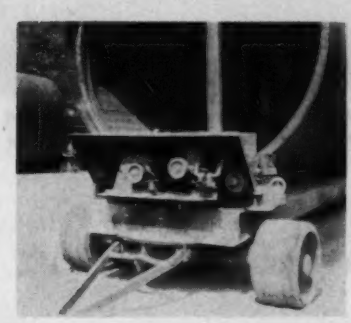
For field jointing, 18 in. of pipe is left free of mesh at each end. And in those areas, too, the pipe's longitudinal welded seams are ground down to permit smooth rolling in the contractor's pipe-rotation dollies.

Bethlehem ships the pipe by rail, one length to a gondola car, to Langenfelder's processing yard at Havre de Grace, about the midpoint of the job. There a 70-ton P&H truck crane with 70-ft boom unloads them.

The crane is equipped with job-added Pierce hydraulic outriggers. Attached by Langenfelder mechanics in one day, the outrigger beams can be



REINFORCING RING—Michigan rig sets it inside end of ½-in.-wall pipe. Thicker walls, up to 1 in., do not need it.



ROTATION UNIT—Powered by air motor, it drives twin rollers that cradle pipe and rotate it while mortar is applied.

Goes In Fast

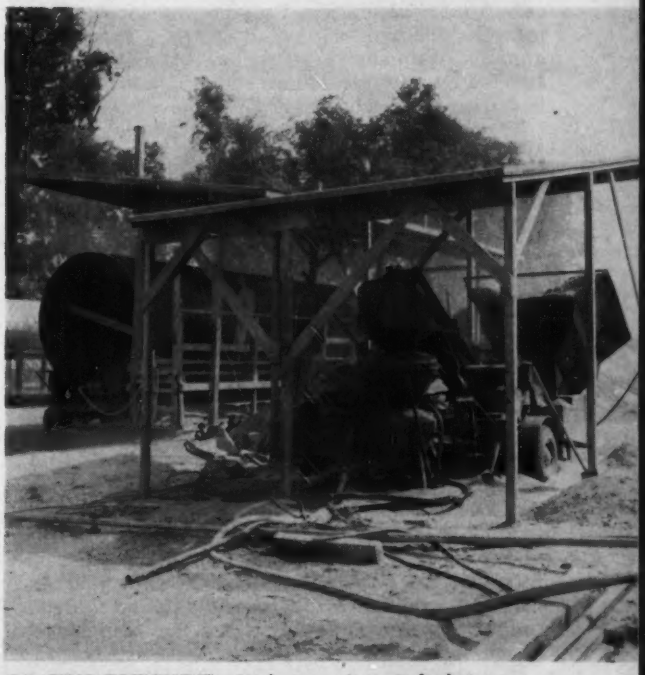
extended or retracted and their pads raised or lowered from a single cab control. Set-up takes 2 min.

The crane handles the pipe lengths, which weigh from 12 to 24 tons, with two slings from a 12-in.-dia spreader beam 37 ft long. It places the pipe on one of the four dollies the contractor built for rotating the pipe during the coating application.

Each 45-ft-long, 5-ft-wide dolly rides on old solid-tire wheels. Two steel rollers near each end of the dolly cradle the pipe so it is free to turn about its longitudinal axis. One pair of rollers acts as idlers. The other pair is powered by an air motor, through a speed reducer, which allows them to turn the pipe. It makes one revolution in 4 min.

While on its dolly, the pipe is fitted with circumferential "shooting rings" near each end. These establish the length of the mortar coating to be applied. They also assist the mortar crew in gaging the coating thickness, which normally is 1 in.

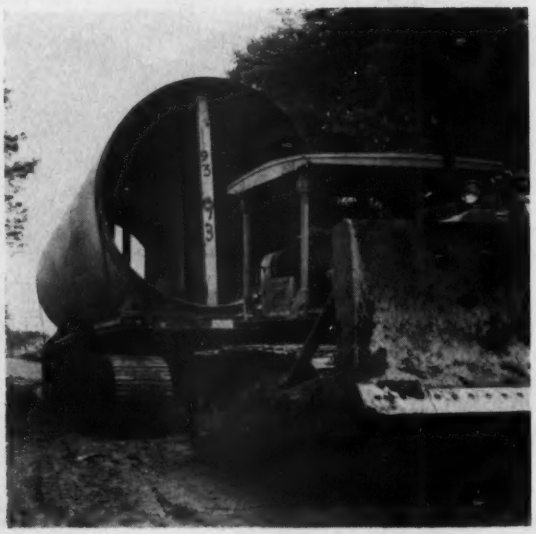
When this preliminary work is done, dolly and pipe are towed to the coating station. There an air hose is hooked to the dolly's motor, and two noz-



COATING EQUIPMENT—Airplaco gunning unit feeds two nozzlemen who apply mortar to pipe from raised, covered platform.

Heavy Pipe Is Handled Carefully

LOADING—P&H crane sets coated and cured pipe in cradles on Rogers extendable trailer. Mack truck-tractor will haul it away.



HAULING—For off-road travel, trailer's front is transferred to Athey-tracked dolly fitted with fifth-wheel hitch. D7 tows it.

PIPELINE HITS FAST PACE... *continued*

zlemen spray a 4:1 sand-cement mixture on the slowly rotating pipe. It takes 30 min to complete the pipe's 7-ton coating.

Air for all these operations comes from a receiver into which two Chicago Pneumatic compressors, 600 and 900 cfm, discharge. The mortar gunning equipment is an Airplaco Model 700 unit. It is fed by an Airplaco mix elevator, which in turn is loaded by a wheeled tractor-shovel.

There are three of these shovels at the yard—a Michigan 125A, a Cat 944, and an Allis-Chalmers TL-20. In addition to loading the mix elevator, they build stockpiles, clean up spillage, and tow the pipe dollies.

Towed to a storage area nearby, the freshly coated pipe is covered with burlap and watered down. Then the P&H crane lifts it to cradles for four days of water curing.

The same rig removes cured pipe from storage and loads it on a Rogers heavy-duty flat bed trailer. The trailer is extendable, and is adjusted so cradles at either end of the bed hold the uncoated sections of the pipe.

A Mack truck-tractor tows the trailer to as close as it can get to point of placement. If it encounters bad ground, as it frequently does, the truck is unhitched and a dolly is run in under the front of the trailer. The dolly consists of a steel frame fitted with a pair of 7-ft-long Athey tracks and carrying a standard fifth-wheel hitch and a towing tongue. A Cat D7 dozer tows the trailer-dolly assembly to the pipe trench.

Trench for the pipe averages 12 ft wide and 14 ft deep, requiring 286,000 yd of excavation. A P&H

In the Ditch,

FITTING—While crane holds pipe at angle, top of spigot is inserted in bell of preceding section. After outside top is tack welded, pipe is swung down to seat joint completely.

PLACING—Manitowoc crane lowers pipe into trench. Gravel bedding is omitted at joint locations to provide access all around.

3½-yd backhoe handles most of it. But where rock is encountered, it is drilled and shot, and removed by a Northwest 80-D hoe. Two other Northwest machines—Model 25's with clamshells—also help with trench preparation.

To allow working space for welding and coating the pipe joints, the trench is deepened at the points where they will fall. And between these pockets, a 9-in. blanket of washed gravel is placed to bed the pipe.

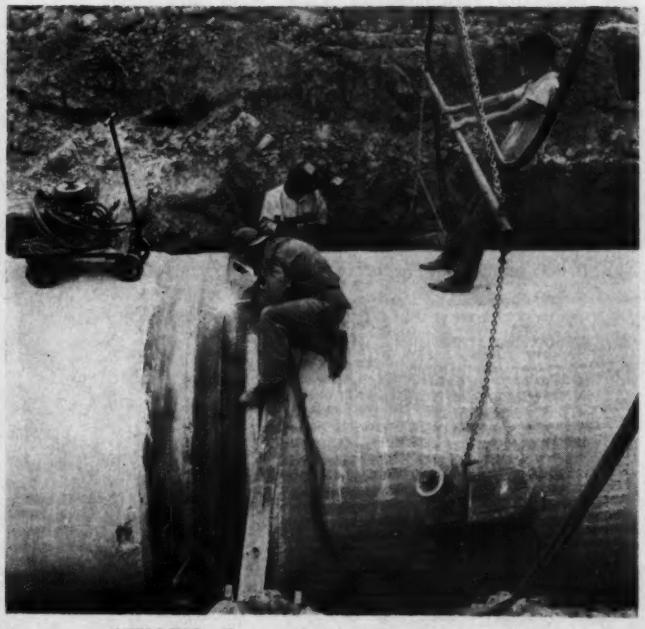
A Manitowoc 3900 crane transfers the pipe, which now weighs from 19 to 31 tons, from delivery-trailer to trench. As the pipe is lowered, its spigot is inserted completely, but at a slight angle, into the bell of the piece already in place. The crane holds the pipe at that angle until the two pieces are tack welded at the top. Then the pipe is lowered into the jointed position.

When the joint has been aligned, the welding crew takes over, using an Aircomatic dip transfer method. This is a semi-automatic, continuous-wire process with carbon dioxide as the shielding gas. It takes 3½ hr of arc time to make the complete in-and-out weld.

Then the welded joint is air-tested for leaks. For this, Bethlehem has provided four small threaded pipe taps in the bell of each length of pipe. Through the handiest of these to reach (the

continued on page 118

Operations Are Varied



WELDING—Crew with Aircomatic semi-automatic, continuous-wire dip-transfer equipment seals joint inside and out with circumferential fillet welds in only 3½ hr of arc time.

TESTING—Air at 120 psi is pumped into "chamber" bounded by bell, spigot inside it, and the two circumferential fillet welds that join them. Liquid soap will locate any leaks.

No. 2 in a series of announcements on new HOUGH *machines*

This all-new 1¾ cu. yd. PAYLOADER

is far ahead

of any machine in its price class . . . in capacity, power, design and performance

The Frank G. Hough Co. has been engaged in a continuous program of research, development and improvement of exising models ever since it pioneered the first four-wheel-drive tractor-shovel. This program led to the new concept and design of the H-30 and H-120 PAYLOADER units which gained tremendous acceptance during the past two years and has helped to maintain PAYLOADER leadership.

The H-60 represents even further progress and development. It is a completely new machine in size and capacity with these special points of interest . . .

High Lift and Long Reach: Note the ease with which the operaror deposits a full load in the hopper. Faster, more productive cycles are the result.

Safety and Convenience: All bucket and boom mechanisms are located ahead of the operator compartment for maximum protection. The steeply-sloped cowl and open design give 100% visibility. The comfortable, adjustable bucket seat and conveniently located controls make operation easy. The walk-in operator's compartment is easily accessible with safety ladder and hand rails.

Less Maintenance: Only PAYLOADER units like the new H-60 have a simplified boom mechanism with a single bucket tilt cylinder. This means you have from 4 to 10 fewer pivot and grease points and fewer parts to service and maintain. Furthermore, all pivot points on steering, boom and bucket mechanisms are fitted with "O" rings and other seals which keep grease in and dirt out to provide longer life and less maintenance. The hydraulic steering system uses two direct-acting rams with fewer pivot points.

"Keep-clean" Hydraulic System: A valuable, exclusive HOUGH feature is the closed and pressure-controlled hydraulic system to keep out air-borne dust and moisture. The new cylindrical, vessel-type reservoir has extra strength and the entire top is easily removed for thorough maintenance and easy servicing. There is a complete full-flow micronic filtering system.

"No stop" Full Power-shift Transmission: This HOUGH transmission was developed exclusively for rubber-tired tractor-shovel requirements and has been thoroughly proven on thousands of PAYLOADER units. All shifts, up or down, forward or reverse, can be made "on-the-go" with no stopping and engagement of gears needed for "range-shifts."

Sealed, 4-wheel Power Brakes: These powerful brakes are air-controlled with only touch-toe effort and are sealed against dust and dirt. Furthermore, the exclusive HOUGH axle design makes it possible to service and re-line the brakes without removing and exposing planetary hubs to dust and dirt. Another important HOUGH-pioneered feature is the "Operator's choice" dual brake pedals which permit braking with or without transmission engaged.

Positive Oil Cooling: Separate fan-cooled oil-to-air radiator assures positive cooling of both transmission and torque converter oil. Another exclusive HOUGH protective feature.

"Power-transfer" Differentials: Both axles are equipped with torque-porportioning differentials. When one wheel has better traction than the other on the same axle, it can automatically receive up to 38% more torque. This assures the best possible traction at all times.

The new H-60 model is offered with a choice of gasoline or diesel power and with buckets from 1⅛ to 3½ cubic yard capacities. (S.A.E. rated) For additional information and specifications, see your HOUGH Distributor or use the attached coupon.

THE FRANK G. HOUGH CO. 10-8-1
706 Sunnyside Ave., Libertyville, Ill.

Send full data on all-new Model H-60 "PAYLOADER"

Name _____
Title _____
Company _____
Street _____
City _____ State _____

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY - INTERNATIONAL HARVESTER COMPANY

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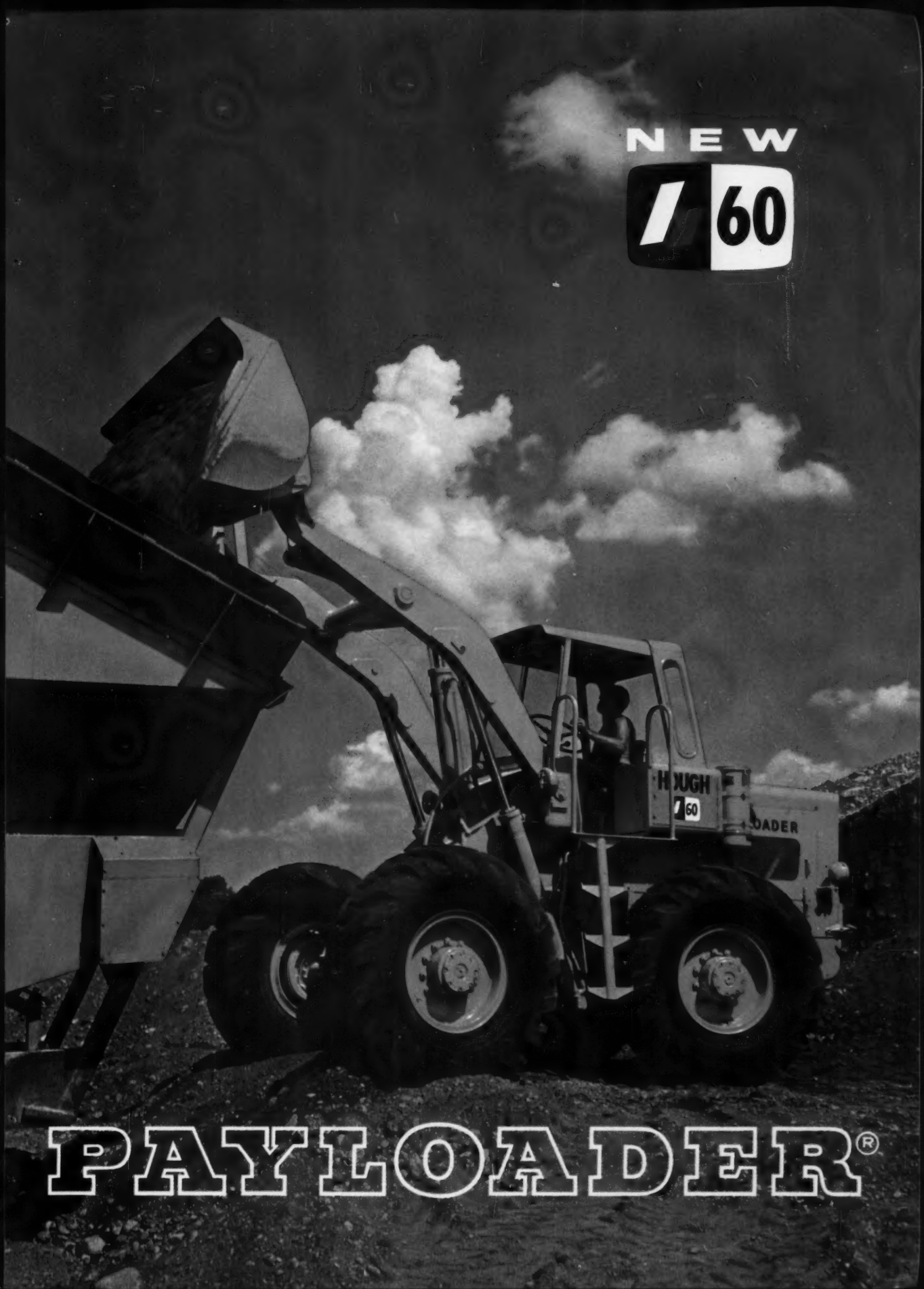
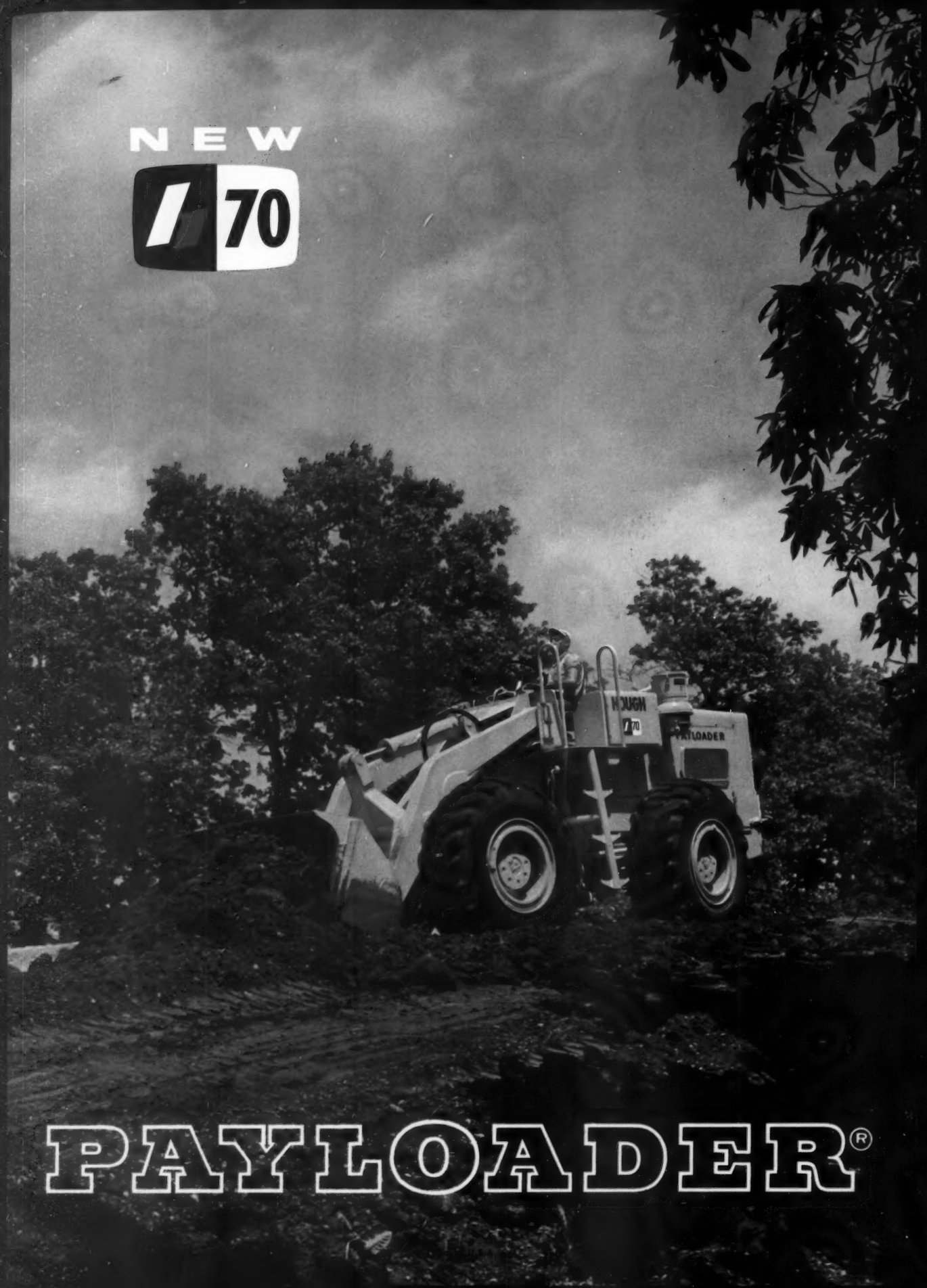

NEW
60
HOUGH
60
PAYLOADER®



PAYLOADER®

No. 3 in a series of announcements on new HOUGH *machines*

The new 2½ cu. yd. PAYLOADER

has everything

according to the aggregate producers and contractors who tested this unit

The advanced design and exclusive features of this new H-70 series "C" model were subjected to many months of continuous, rugged testing by users on actual job-site locations before final evaluation.

Those items which contributed the most to the unmatched performance of the smaller H-30 and larger H-120 four-wheel-drive PAYLOADER models during the past two years served as a guide for the development of this completely new 2½ cubic yard tractor-shovel.

By comparison with the previous model, the H-70C has increased capacity, more power, greater flotation, additional reach, easier handling, simplified maintenance, new safety features and vastly superior performance. Some of the features are:

More Capacity: An increase of 25% in the size of the standard bucket, from 2 to 2½ cubic yards. (S.A.E. rated) Optional buckets from 1⅜ to 5 cu. yds. are available.

More Power: The new heavy-duty diesel engine delivers 148 hp which is an increase of 20% over the previous model. This gives the H-70C more horsepower per pound of machine weight than any comparable machine.

Safety and Convenience: All bucket and boom mechanisms are located ahead of the operator compartment for maximum protection. The steeply-sloped cowl and open design give 100% visibility. A comfortable, adjustable bucket seat and conveniently located controls make operation easy. Safety ladder and hand rails provide easy access to the walk-in driver compartment.

Less Maintenance: The only loader in its class with simplified PAYLOADER boom mechanism and single bucket tilt cylinder. This means you have from 4 to 10 fewer pivot and grease points and fewer parts to service and maintain. In addition, all pivot points on steering, boom and bucket mechanisms are fitted with "O" rings and other seals which keep grease in and dirt out to provide longer life and less maintenance.

"Keep-clean" Hydraulic System: A valuable, exclusive HOUGH feature is the closed and pressure-controlled hydraulic system to keep out air-borne dust and moisture. The new cylindrical, vessel-type reservoir has extra strength and the entire top is easily removed for thorough maintenance and easy servicing. There is a complete full-flow micronic filtering system.

"No-stop" Full Power-shift Transmission: This HOUGH transmission was developed exclusively for rubber-tired tractor-shovel requirements and has been thoroughly proven on thousands of PAYLOADER units. All shifts, up or down, forward or reverse, can be made "on-the-go" with no stops for any "range-shift" engaging of gears.

The H-70 series "C" has many other proven HOUGH features including a separate fan-cooled, oil-to-air radiator for effective cooling of both torque-converter and transmission oil; torque-proportioning differentials for better traction; "operator's choice" dual brake pedals which permit braking with or without transmission engaged. For complete information on the tractor-shovel that "has everything" see your HOUGH distributor or use the coupon.

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY - INTERNATIONAL HARVESTER COMPANY

HOUGH, PAYLOADER, PAYDOZER, PAYMOVER, PAYLOGGER, PAYLOMATIC and PAY are registered trademark names of The Frank G. Hough Co.

HOUGH®

THE FRANK G. HOUGH CO. 10-8-2
706 Sunnyside Ave., Libertyville, Ill.
Send complete data on H-70C PAYLOADER
Name
Title
Company
Street
City State

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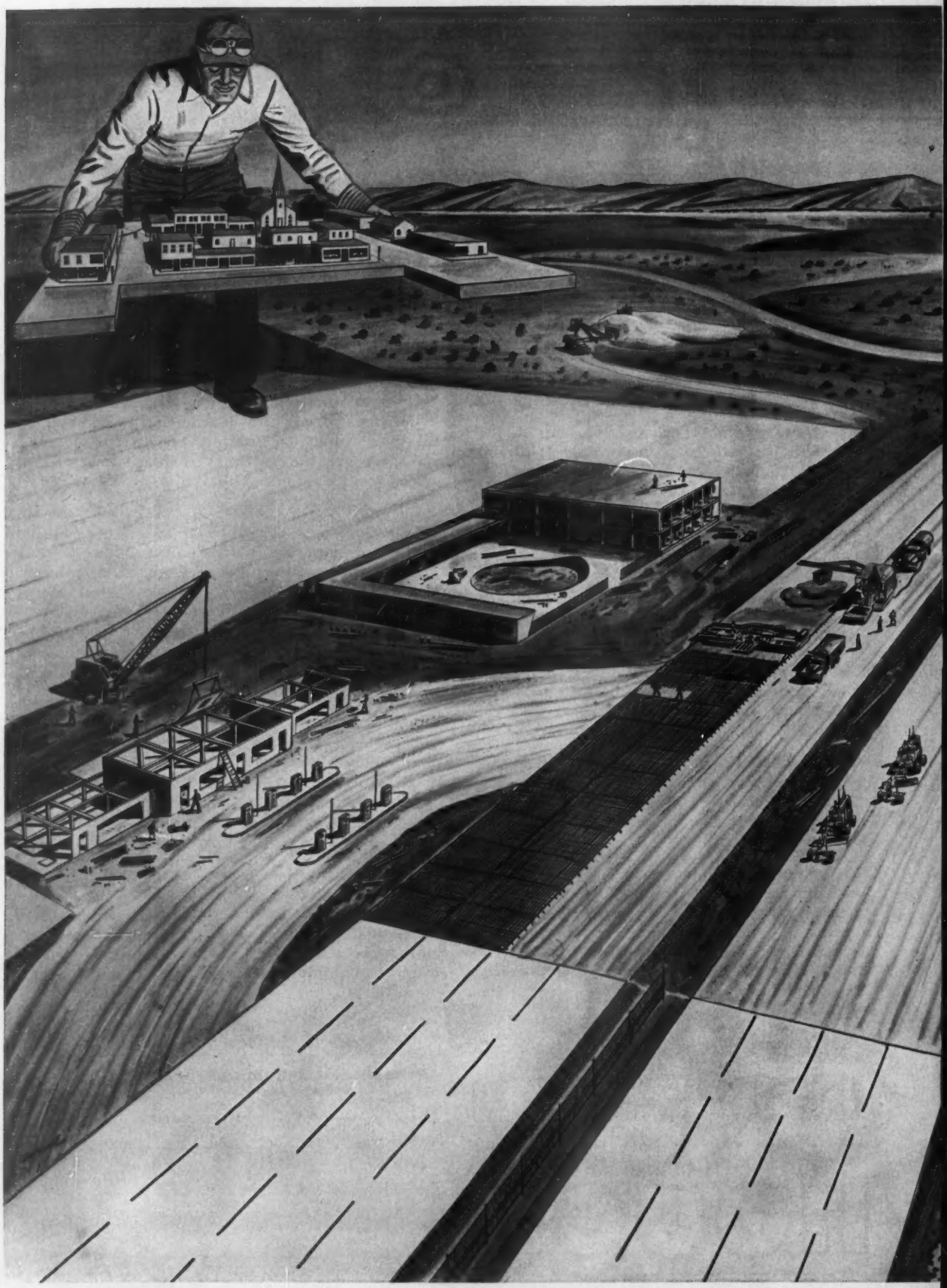


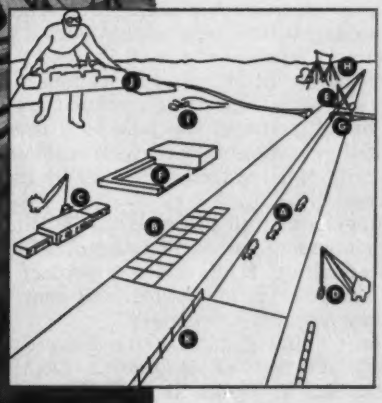
New Highways help fill up America's wide open spaces

New highways not only connect established cities, they also create new towns and villages along their routes. As service areas and motels spring up to serve the traveler, new settlements gradually grow up around them.

CF&I—a nationwide company—makes a wide range of steel products to help build the roads and service areas that, in turn, help build a better America. This illustration shows the many roles these products play in the creation of one such roadside community.

More and more contractors now realize that no company is better suited to serve this country's growing needs than an American company like CF&I. Top quality steel products and expert on-the-job technical assistance are two of the meanings inherent in CF&I's corporate image. For complete details on these and other steel products, consult your nearby CF&I sales office or write for Catalog G-104.

THE COLORADO FUEL AND IRON CORPORATION
Denver • Oakland • New York
Sales Offices in Key Cities



(A) CF&I Cutting Edges for road scraping and grading • CF&I Welded Wire Fabric for reinforcement of (B) concrete highways, (C) tilt-up sections and (D) concrete pipe • (E) CF&I-Wickwire Wire Rope and Slings for cranes • (F) CF&I-Realock Chain Link Fence for property protection • (G) CF&I Prestressed Strand and Wire for precast concrete bridge girders • (H) CF&I Galvanized Strand for guying radio towers • (I) CF&I Industrial Screens for sizing sand and aggregate • (J) CF&I Wire Products for farms and homes • (K) New type medium barrier consisting of Realock Chain Link Fence and Wickwire Rope Safety lines prevents out-of-control cars from hurdling divider into oncoming traffic, and also prevents them from bouncing back into their own lane.

Circle 117 on Reader Service Card

After Final Operations They Bury Their Handiwork

REINFORCING — After joint is tested and passed, mesh is wrapped around and tightened by come-along. Bent wires will hold it.

COATING — Field crew sprays mortar on joint and patches any imperfections in the pipe coating that was applied in the yard.

BACKFILLING—In wrap-up operation, Caterpillar D8 bulldozer and Traxcavator cover the line.

others are left plugged), 120-psi air is introduced into the "chamber" bounded by the bell, the spigot inside it, and the two circumferential fillet welds that join them. If the chamber will not maintain the air pressure, workmen coat the welds with liquid soap so bubbles will locate the leak.

When the joint passes muster, it is banded with wire mesh and coated. An Airplaco 750 machine feeding one nozzle and powered by a Jaeger 185-cfm compressor handles this operation. The field coating crew also patches any spots damaged in transporting and placing the pipe sections.

Next step is to place a gravel bed in the space beneath the joints and backfill the line with earth.

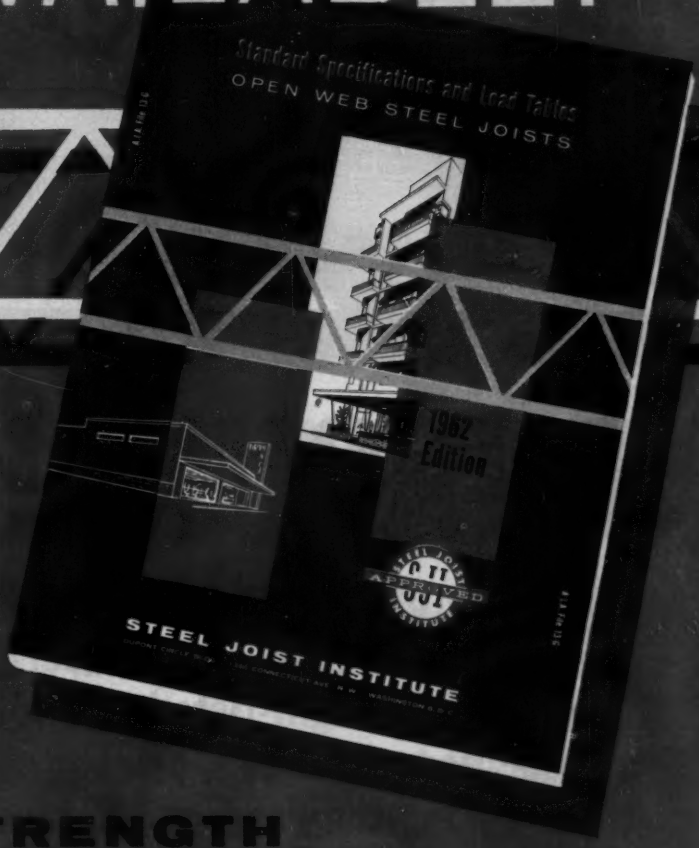
Then 6x6-in. timber stulls, or shoring, that were placed inside the pipe at Bethlehem's plant, are removed. Purpose of the stulls is to hold the pipe temporarily out of round by elongating the vertical axis. When the stulls are removed, pressure of the backfill returns the pipe to a round shape.

Final operation is to coat the inside of the pipeline with ½ in. of cement mortar by the Centriline process.

Supervising the job is B. G. Woolfolk, general superintendent for all of Langenfelder's construction activities. H. E. Green is project manager, J. A. Brady is project superintendent, and J. S. Cockey is project engineer.

The pipeline is part of the Susquehanna Water Supply Project of Baltimor's Dept. of Public Works. H. U. Mettee is the city's resident engineer, and Jerome Kelly is his assistant. Consulting engineer is Whitman, Requardt & Associates of Baltimore.

NOW AVAILABLE!



NEW, COMPLETE STANDARD SPECIFICATIONS and LOAD TABLES

FOR HIGH-STRENGTH OPEN WEB STEEL JOISTS

This 52-page reference manual, reflecting the recently adopted changes in specifications and load tables for three series of high-strength joists, *replaces all previous standards.* The new specifications and load tables cover three series of joists:

J-Series (replacing the old S-Series), based on a design stress in tension of 22,000 psi

LA-Series (replacing the old L-Series), longspan joists compatible with the new J-Series

H-Series (completely new), high-strength joists made from 50,000 psi minimum yield strength steel

This single edition contains all the information needed for the easy, accurate specification of joists to carry uniform loads on spans of up to 96 feet.

Complimentary copies are available on request.

STEEL JOIST INSTITUTE

SUITE 715, DUPONT CIRCLE BLDG.
WASHINGTON 6, D. C.

STEEL JOIST SJI APPROVED INSTITUTE

STEEL JOIST INSTITUTE
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Please send me a complimentary copy of the 1962 edition of the Standard Specifications and Load Tables.

Name_____

Address_____

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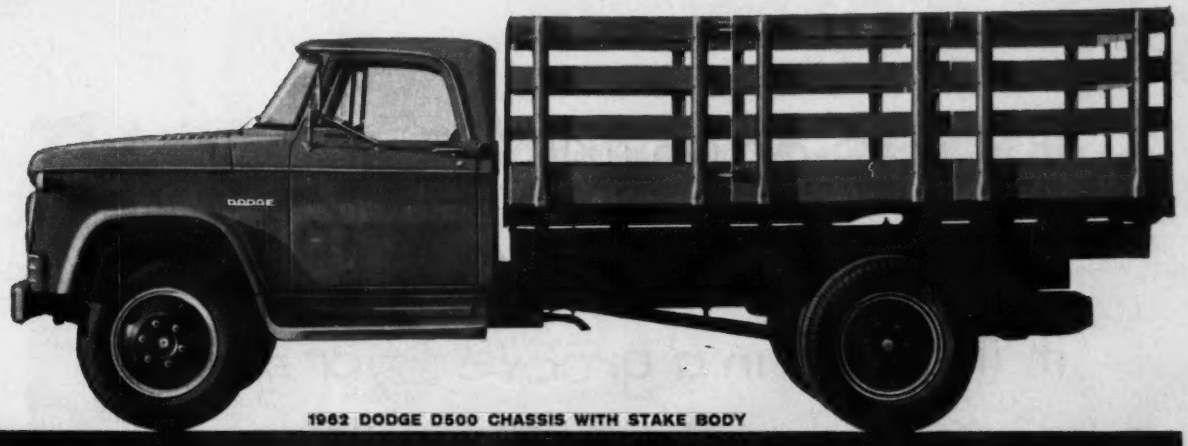
1962 DODGE HALF-TON PICKUP

ANNOUNCING THE 1

FROM 1/2-TON PICKUP TO DIESEL POWER, Dodge trucks for 1962 feature more than 50 engineering advances to make them tougher, more tight-fisted. ■ And they're on display right now at your Dodge dealer's, priced to compete with every full-size truck rolling the road. ■ Whatever your trucking job, there's a tough Dodge to do the job better, faster, more economically.

1962 DODGE W200 4-WHEEL-DRIVE SWEPTLINE PICKUP

Circle 119 on Reader Service Card



1962 DODGE D500 CHASSIS WITH STAKE BODY

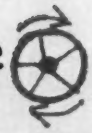
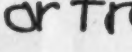
962 DODGE TRUCKS

Advancements include new axles, transmissions, steering gears, diesel engines, and electrical components. ■ Every gasoline-powered model has a 35-amp alternator as standard equipment for faster, surer starts in all weather. ■ See and drive the 1962 Dodge trucks at your dependable Dodge dealer's.

DODGE BUILDS TOUGH TRUCKS

1962 DODGE CT800 GASOLINE-POWERED TANDEM DUMP

Circle 121 on Reader Service Card

If it rolls on an axle  or turns in a bearing or rides on a shaft if it slides in a groove or moves on a pivot if it bores or cuts  or transmits pressure one of Sinclair's 500 specialized lubricants is designed to make it work better.

Sinclair

SINCLAIR REFINING COMPANY 600 Fifth Ave, N.Y. 20 N.Y.

Circle 122 on Reader Service Card

This Tractor Pushes Both Ways

IN REVERSE—Rubber-tired tractor traveling in reverse uses its rear-mounted push plate to load tandem scraper. Next, it will push another scraper without turning around.

A RUBBER-TIRED TRACTOR that push-loads scrapers while traveling in either forward or reverse gear is a money-maker for Robertson Construction, Ltd., of Prince Albert, Sask.

The contractor has fitted out its LeTourneau-Westinghouse C Tournatractor with a conventional dozer blade and a rear-mounted push plate. Now, the rig push-loads scrapers in second gear forward or in first gear reverse.

The contractor says that the pusher's two-way versatility enables the rig to load 50% more scrapers in the time saved by eliminating turn-arounds and excessive maneuvering.

The Tournatractor recently push-loaded two D Tournapulls with single scrapers and two D's with tandem bowls on a 8.4-mi road job near Prince Albert. This fleet moved 155,000 yd in one month, thanks to time-saving in the cut.

The two-way tractor loaded an average of 60 scrapers per hr. After pushing a scraper in one direction with the dozer, the tractor moved over and pushed another scraper in the opposite direction with its rear-mounted push-plate.

The tandem scrapers averaged 7.5 yd per bowl, making 16 cycles per hr for an hourly production rate per unit of 240 yd. Haul distance averaged about 300 ft.

The rear bowl of each tandem scraper loaded in half the time required to fill the front bowl, which was loaded first. Loading time for the front bowl averaged 30 sec.

For the most part, cuts were in the ditch. At full grade, the tandems had to circle around to gain speed before negotiating the 3-to-1 slope to the road. On the fill, the tandems had no trouble turning within the 22-ft width at the top.

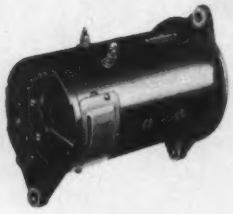
Material was half sand; the balance, clay with some muskeg. At one wet spot it was necessary to disconnect the tandems because of the heavy going. A crew unhooked the scrapers in less than 10 min each.

The contractor reported fuel usage for the tandems of 5.6 gal per hr, which is about 1 gal per hr more than the singles used. Availability of equipment on this job exceeded 95%. The tandems lost no time at all.

Robertson fitted the scrapers with trailer hitches to make his spread completely mobile. As the fleet moves from job to job, the scrapers haul house trailers, a cook shack, a fuel tank, and a trailer that carries a crawler tractor.

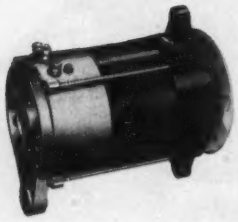
IN FORWARD—Scraper completes circle out of ditch after being loaded by tractor, which now travels in second gear forward to push another tandem in the opposite direction.

KEEP YOUR OFF-THE-ROAD



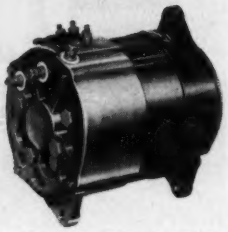
HEAVY-DUTY, LONG-LIFE D.C. GENERATOR

- Double-length, double-life brushes with constant-tension springs
- Ball bearings with sealed grease reservoirs—need no lubrication between engine overhauls
- 50-ampere maximum output—available with 10-ampere output at engine idle
- Sealed field coils—impervious to moisture and corrosion



SELF-RECTIFYING A.C. GENERATOR

- Built-in silicon diodes eliminate external rectifier
- 30-ampere output at normal engine idle
- 60- or 85-ampere maximum output models available
- Ball bearings with sealed grease reservoirs—need no lubrication between engine overhauls

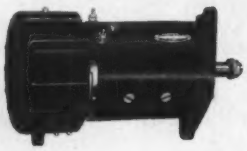


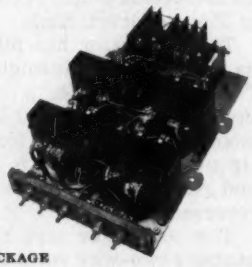
EXTRA-HIGH-OUTPUT A.C. GENERATOR

- 130-ampere maximum output
- 40 amperes at engine idle
- Three-phase a.c. voltage available—ideal for 120-volt conversion as a power source for mobile d.c. power equipment
- Ball bearings with sealed grease reservoirs—need no lubrication between engine overhauls

FAN AND SHROUD ENCLOSED D.C. GENERATORS

- Totally enclosed for protection against foreign materials
- 12-volt—24- and 40-ampere maximum outputs. 24-volt—15- and 20-ampere maximum output generators available
- Double-life brushes and constant-tension brush springs
- Ball bearings with sealed grease reservoirs—need no lubrication between engine overhauls





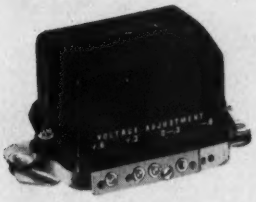
POWER SUPPLY PACKAGE

- Rectifies and transforms vehicle generator voltage up to 120 volts d.c.
- Furnishes dependable power up to 1200 watts
- Provides mobile power suitable for incandescent lights, universal motors, d.c. motors, a.c.-d.c. radios, resistive loads without thermostats, or other 120-volt d.c. equipment

SPECIFY DELCO-REMY POWER-MATCHED ELECTRICAL SYSTEMS!

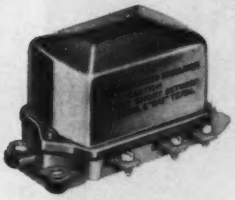
It's the sure way to prevent downtime and costly repairs caused by inadequate electrical systems. With Delco-Remy's broad line of complete systems and individual components, you can match electrical power exactly to the special needs of your equipment. New design concepts and construction features mean Delco-Remy units last longer, require little or no periodic servicing and deliver more dependable operation under *all* conditions. The particular Delco-Remy system that'll prove

EQUIPMENT ON THE JOB . . .



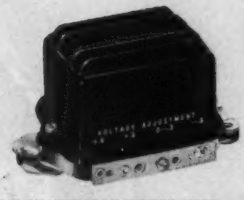
DOUBLE CONTACT GENERATOR REGULATOR

- Double contacts provide better voltage control—longer service life
- Simplified external adjustment feature quickly tailors voltage to job
- Waterproofing insures long life and reliable operation



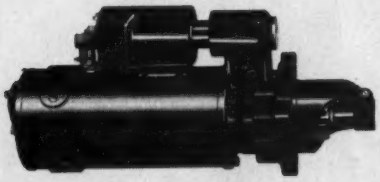
TRANSISTORIZED REGULATOR

- Vibrating type voltage sensor plus single transistor extends service life
- Accurate voltage control at all generator speeds
- Available with simplified external voltage adjustment feature
- Available for either indicator light or ammeter circuits



FULL-TRANSISTOR REGULATOR

- No moving parts to wear out
- Requires no periodic servicing
- Constant voltage control—unaffected by temperature changes, vibration or mounting position
- Simplified external adjustment feature—permits tailoring voltage to operating conditions



HIGH-DUTY CRANKING MOTOR

- New high-performance 12-v. motor eliminates need for series parallel switch circuits with no increase in battery capacity—24- and 32-volt models also available
- Two-piece housing permits 24 different solenoid positions, reduces number of models and spare parts needed
- Totally enclosed drive shifting mechanism is protected against dirt, water, slush and ice
- Heavy-duty sprag clutch remains engaged until engine starts—improves cold weather starting

DC-250 HIGH-DUTY BATTERIES

- Glass mat retainers protect positive plate material—improve cycling ability, provide longer service life
- Resin seals between cell cover and terminal and between case and cell cover protect plates and separators from vibration damage and prevent electrolyte loss
- Newly formulated positive plate material withstands vibration and cycling damage—delivers dependable power during longer life span of DC-250

most economical for your needs depends on your equipment's job and its performance requirements. Ask your dealer about Delco-Remy power-matched electrical systems and specify them when ordering new vehicles. And, to bring your present equipment up to date, contact your United Delco Distributor.

Delco Remy

DELCO-REMY • DIVISION OF GENERAL MOTORS • ANDERSON, INDIANA

Circle 125 on Reader Service Card

St. Mark's Episcopal Church / Frank Mercedes & Son, General Contractor
New Caanan, Conn. / Sherwood, Mills and Smith, Architects

20K heavy duty shoring safely supports huge triangular vault roof

20K FRAMES (each capable of carrying 10,000 lbs. per leg) of "Trouble Saver"® Sectional Steel Shoring are used here to support this complicated 1 ft. to 5 ft.-thick cantilevered concrete roof system of sloping planes and hyperbolic paraboloids. Shoring is quickly erected in free standing, perfectly level and safe units to meet varying heights. Adjustable screw legs are used top and bottom, with U-heads at top to receive stringers. Structure is a 5-bay, 52 ft. by 167 ft. by 50 ft.-high church of modern design.

PS Co. offers complete engineering service through 24 branch offices and warehouses which stock the many types of shoring or scaffolding used when recommending the correct *method* for large jobs or small, complicated or routine. See the Yellow Pages for your nearest source, or write for Shoring Bulletin PSS-51

PSCo SCAFFOLDING & SHORING • SALES • RENTALS

THE PATENT SCAFFOLDING CO., INC.

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Branches in all principal cities
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Circle 127 on Reader Service Card

Are you running TWO plants for ONE plant production?

We invite your consideration of the **H&B Single Duty and Double Duty** T-100 plant arrangements

SINGLE DUTY	*DOUBLE DUTY
DRYER 124″ dia. x 44″ long	**DRYER** TWO 100″ dia. x 36′ long units
ELEVATOR 24″ x 10″ AC Buckets @ 12″ centers on X-859 chain	**ELEVATOR** TWO units, with 18″ x 10″ AC buckets on SS-856 chain
SCREEN Two 3⅓ deck—4′ x 14′ assemblies	**SCREEN** TWO 3⅓ deck—5′ x 16′ assemblies
HOT BIN 4 compartment—100 tons capacity	**HOT BIN** 4 compartment—150 tons capacity
MIXER Twin shaft jacketed type with 103 cu. ft. volume below center line of shafts	**MIXER** Twin shaft jacketed type with 103 cu. ft. volume below center line of shafts

*(May be operated with one dryer—elevator—screen section only for medium production, or with both sections for maximum production.)

H&B Subsidiary of AMERICAN HOIST

HETHERINGTON & BERNER INC.

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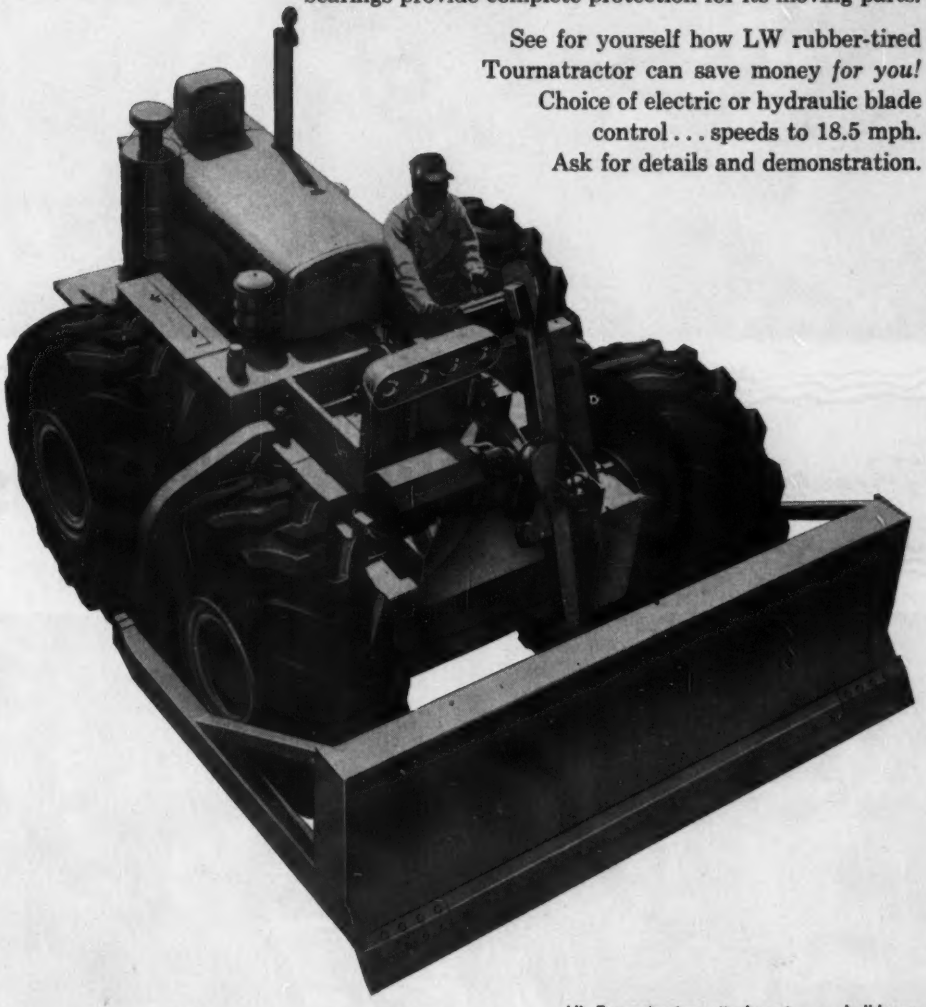
Circle 128 on Reader Service Card

APPLICATION ?

You name it... pulling, pushing, dozing, stockpiling, snow-plowing . . . this LeTourneau-Westinghouse tractor will handle it fast, economically! The built-in versatility of the 218-hp Tournatractor® spreads your initial investment over a wide range of work assignments. Consider this too . . .

Tournatractor works *faster.* It completes 85% of your tractor jobs in *half the time* it takes with slow-moving crawlers. What's more, it drastically reduces your job-to-job transport costs, because this rubber-tired tractor "*runs*" to the next assignment. And, you'll save on maintenance and repairs, because LW tractor's husky all-welded box-type frame and anti-friction bearings provide complete protection for its moving parts.

See for yourself how LW rubber-tired Tournatractor can save money *for you!* Choice of electric or hydraulic blade control . . . speeds to 18.5 mph. Ask for details and demonstration.



All Tournatractor attachments . . . bulldozer, Angledozer® and coal blades, root rake, sheep's foot rollers, scrapers, snow plow, etc. . . . are designed and built by LeTourneau-Westinghouse. You can be sure of efficient operation no matter what the application.

CT-2465-G-1

LW

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILL.

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Circle 129 on Reader Service Card

SAN JUAN

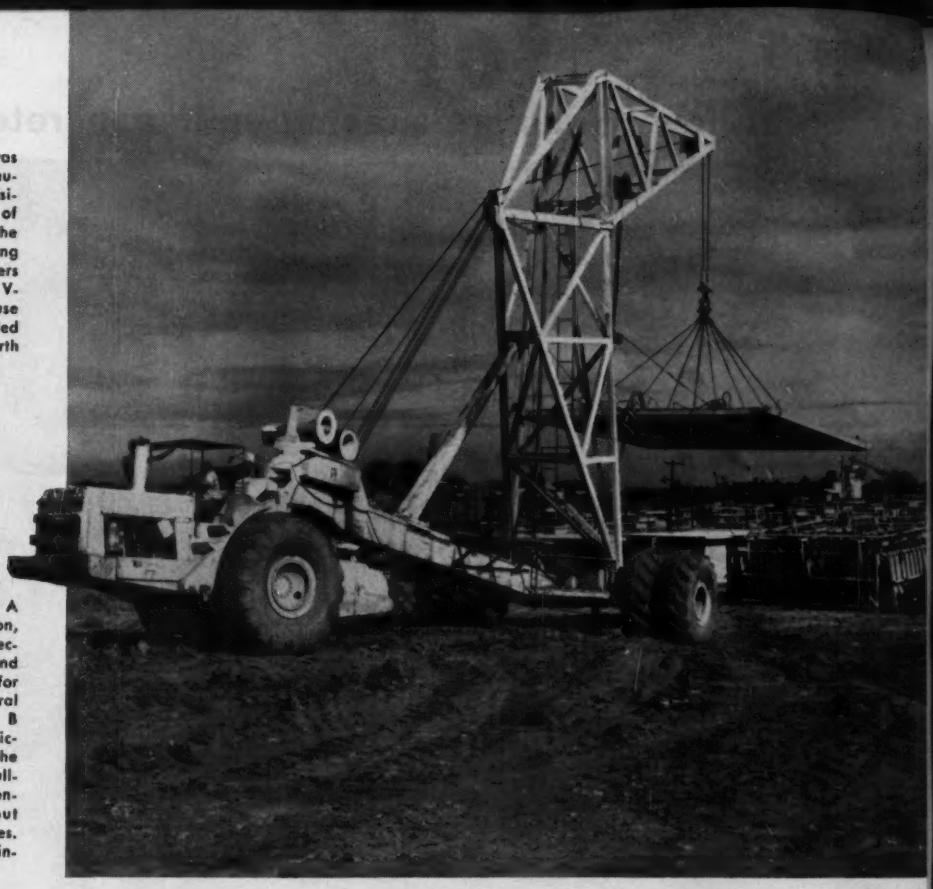
In Puerto Rico

12 LW machines speed

A fast earthmoving pace — was set at Minillas when A. Valles Montequin, of Hato Rey, brought in his LeTourneau-Westinghouse fleet to level land for industrial development. 5 B Tournapulls each moved an average of 18.3 m^3 (24 yd^3) of hard clay, completed 1290-m (4232-ft) cycles in 5 minutes. Other LW machines at the site included 2 rubber-tired Tournatractors and an LW 660 grader.

Complete information on LeTourneau-Westinghouse scrapers, tractors, graders, and hauling equipment will be sent promptly on request.

3300 m³ (4320 yd³) per shift was production average for 3 LeTourneau-Westinghouse B Tournapulls leveling residential sites at Bayamon (a suburb of San Juan), Puerto Rico. Developer of the 500-lot subdivision — Hato Rey Building Co. Inc. — worked the big LW scrapers on 900-m (2950-ft) cycles. The 430-hp V-Power "B" gets big loads fast because its 29-yd Fullpak scraper bowl is angled at only 1° when loading — lets earth flow in almost horizontally.



Built 4000 homes in one project. A big job, but Ibec Housing Corporation, of Rio Piedras, erected the homes in record time using modern methods and equipment. Concrete walls and roofs, for example, were precast in one general work area. Then, the firm used its B Tournapull prime-mover with 27-metric-ton crane to lift, carry, and position the sections. With LW "electrics" Tournapull-Crane operator has *smooth, positive* control — handles heavy objects without subjecting them to damaging stresses. Electric controls are also easiest to maintain, are not affected by weather.

industrial, residential development

At industrial development site, 160-hp LW 660 grader, owned by A. Valles Montequin, maintained the fill area, and also kept scraper haul-roads in high-speed condition. LW grader features that help to increase production include: 8-forward-speed transmission with 4 reverse and 3 optional creeper gears; big 160 cm (63") blade circle; super-strong one-piece frame; full-floating drive axles and anti-friction power train, and "handy-reach" power controls.

Between push-loading assignments, Montequin's versatile Tournatractors handled dozing. "Go-anywhere" LW tractors complete more work over a wider area with almost no tractor-moving expense. In addition to the electric-control LW tractor shown, LeTourneau-Westinghouse offers you a Tournatractor with hydraulic blade control. This unit is equipped with a 218-hp V-Power diesel engine, has 4 speeds forward to 29.6 kph (18.5 mph), 10 kph (6.2 mph) reverse.

Tournapull, Fullpak, Tournatractor—Trademark Reg. U.S. Pat. Off. LA-2421-DCJ-2wc

LW

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILL.
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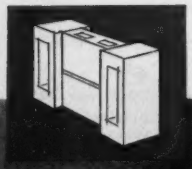
Circle 131 *on Reader Service Card*

Great new things are shaping up in concrete block



Architect Marcel Breuer, New York, alternated hollow-core units and standard 4" x 8" x 16" concrete blocks to create this striking masonry wall. PHOTO COURTESY NATIONAL CONCRETE MASONRY ASSOCIATION.

Atlas Masonry Cement provides the right mortar

Concrete blocks in a range of new designs . . . colors . . . and textures are being used to create unusual and distinctive effects in masonry construction. For structural or decorative use, indoors and out, the economical concrete block is now a major design element in today's building plans. And to lay up these new concrete masonry units, Atlas Masonry Cement continues to be the preferred basic material for mortar. It helps produce a smooth, workable mix . . . assures a stronger bond . . . gives weathertight joints that are uniform in color . . . complies, too, with ASTM and Federal Specifications. For information, write: Universal Atlas Cement, Dept. M, 100 Park Avenue, New York 17, N. Y.

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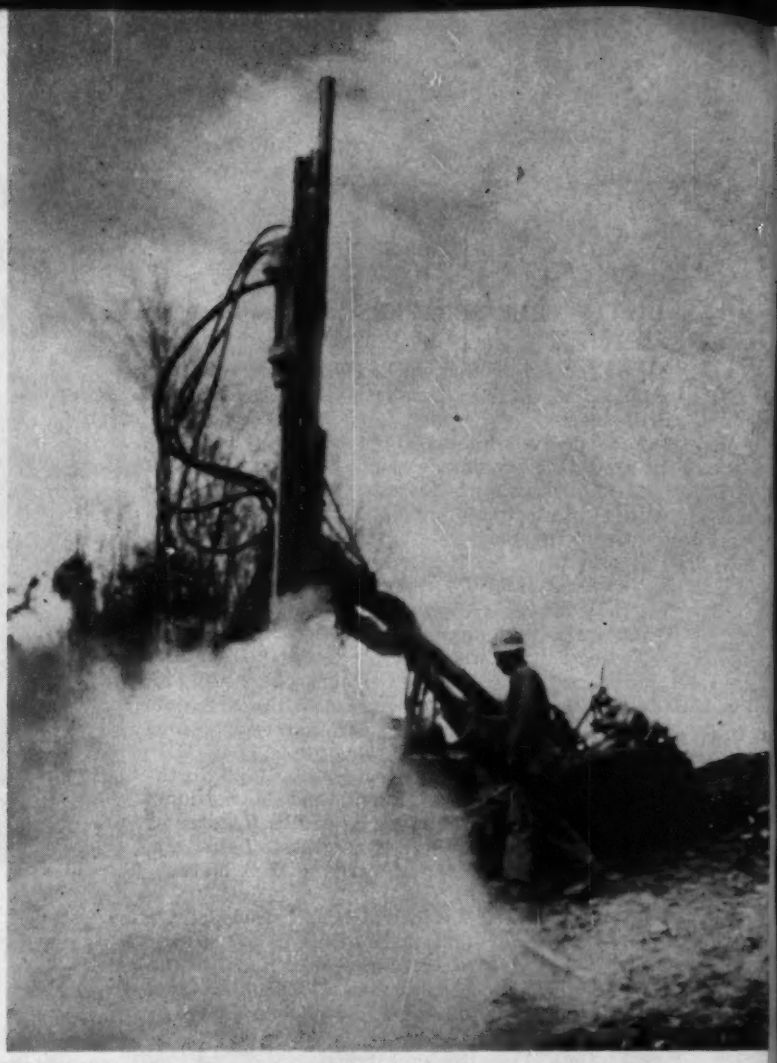
Instead of stripping overburden in a rock cut, this roadbuilder chews through it with special drills to reach rock. Two-in-one blasting lets the scrapers concentrate on big earth cuts.



EARTH—Eight Euclid scrapers work in small spreads to move bulk of material, which is mostly hardpan that requires ripping. Excavation totals 480,000 yd.

ROCK—One of two crawler-mounted rigs equipped with independent-rotation drills sinks hole through overburden into rock. The overburden was as much as 12 ft deep.

Drills Ignore Overburden, Free Scrapers for Other Jobs

DRILLING BLASTHOLES in rock without stripping overburden enabled a contractor to free his earthmoving equipment for other excavation work while drilling crews prepared to shoot rock.

The contractor, Perini Corp. of Framingham, Mass., used two independent-rotation drills for blasthole drilling on this project, a 1.7-mi section of Interstate Route 89 near Lebanon, N.H. The drill rigs were ideal for this job because they can drill by rotation action only, by impact only, or by any combination of the two.

To go through the overburden, the drillers used high rotation with very slow impact so that the soil around a hole was not disturbed. When rock was reached, they switched to normal rotation and impact to go through the hard material. This procedure eliminated the need for casings or mudding to keep holes from caving in.

Overburden was as much as 12 ft deep and averaged about 4 ft. Blastholes were 10 to 36 ft deep.

Before the actual drilling, Perini cleared and grubbed the site and removed about 6 in. of topsoil with a dozer to level the site and remove surface mud. Then two Gardner-Denver ATD3000 swing-boom Air-Tracs with PR123 independent-rotation drills sank the blastholes. The drills are

DRILLS FREE SCRAPERS . . . *continued*

4½-in.-bore units that worked with 2¾-in.-dia bits attached to Gardner-Denver 1¼-in. Hex Hi-Leed drill steels.

Each drill completed about 700 ft of hole in a 10-hr day. In some areas, one drill sank 25 ft of hole in just 20 min. Completed holes were filled with a mixture of ammonium nitrate and 40% dynamite for blasting.

In other rock cuts along the 1.7-mi project, Gardner-Denver and Joy crawler drills handled the blasthole drilling. A separate 600-cfm Ingersoll-Rand compressor supplied air to each drill.

To keep dirt from fouling the compressors, Perini used some of the compressed air to blow dust off the machines while they were working. One man handled this maintenance operation with a long steel nozzle fitted on a 1-in. air hose.

Shot rock now is being excavated by 3-yd Northwest shovels that load Euclid and Mack dump trucks. These haul the material to fills that are as high as 65 ft. When there is no rock to be moved, Perini puts the shovels and trucks to work on common excavation.

To cut down the number of trucks needed for a shovel cut, Perini limits haul distances to a maximum of 500 ft. This requires only two hauling units per shovel and enables the contractor to work in several cuts simultaneously with only a small fleet of trucks.

It's easy to keep the haul distances short on this job. The new highway crosses an existing road

CLEANING COMPRESSOR—To prevent dirt from clogging compressor that powers drills, workman cleans it with air stream.

Short Hauls Break Equipment Into Small Spreads

LOADING ROCK—A 3-yd Northwest shovel loads truck as it cleans up cut. By keeping hauls to a maximum of 500 ft, contractor keeps each shovel busy with only two trucks.

five times within the 1.7-mi stretch, and the contractor must split the project into small sections to maintain traffic while work is in progress. A nearby creek from which Lebanon takes its water also presents a headache because Perini must bridge the creek at all points where equipment crosses it to keep the water clean. This splits the job into still more short sections.

Total excavation on the project is 480,000 yd. A large part of this is clay and hardpan that Perini is moving with a fleet of eight Euclid scrapers. Six are three-axle SS-18's and two are two-axle S-18's. Haul distances for the scrapers are about 1,000 ft.

Ripping and tandem pushing are necessary to load the hardpan. Caterpillar D8's and an Allis-Chalmers HD-21 handle the pushing. Usually, two tractors push each scraper, but occasionally Perini puts three pushers behind a rig for faster loading.

Tandem pushing in the hardpan offers two advantages: loading time is reduced about 50% by adding a second or third pusher and the material in the scraper's bowl is well packed, so that the rigs haul bigger payloads.

One Cat D8 with a towed single-shank ripper handles all ripping. The 24-in.-long ripper shank reaches to a depth of about 20 in. Perini is using a towed ripper instead of a tractor mounted one because it increases his equipment versatility.

Frequently, the D8 with the ripper joins the pushers when faster loading is necessary. The D8 is big enough to handle push loading as well as ripping with the towed unit, but the tractor is not

RIPPING HARDPAN—A Caterpillar D8 tows a 24-in.-long single-shank ripper to loosen hardpan. Versatile rig also assists pushers in loading scrapers with bulky material.

PUSHING TRIO—Three push-dozers team up to give a Euclid SS-18 a fully packed bowl. Perini estimates that a second or third pusher cuts loading time by about 50%.

quite big enough to handle a tractor-mounted ripper for the hard material. To avoid using a D9 on a job where much of its capacity would be wasted, Perini chose the D8 and towed ripper combination.

After the scrapers spread their loads, a LeTourneau-Westinghouse Tournadozer levels the fill. No compaction equipment is necessary. The scrapers traveling to and from the cuts and the L-W dozer compact the material sufficiently.

In addition to the fleet of self-propelled scrapers, Perini also worked with tractor-drawn units. These made one 73-ft-deep cut and finished the slopes. Dozers worked on side hill cuts.

After earthmoving is completed, the contractor will place a subbase consisting of sand, bank run gravel, and crushed gravel. A crushing plant near the job site will produce the gravel.

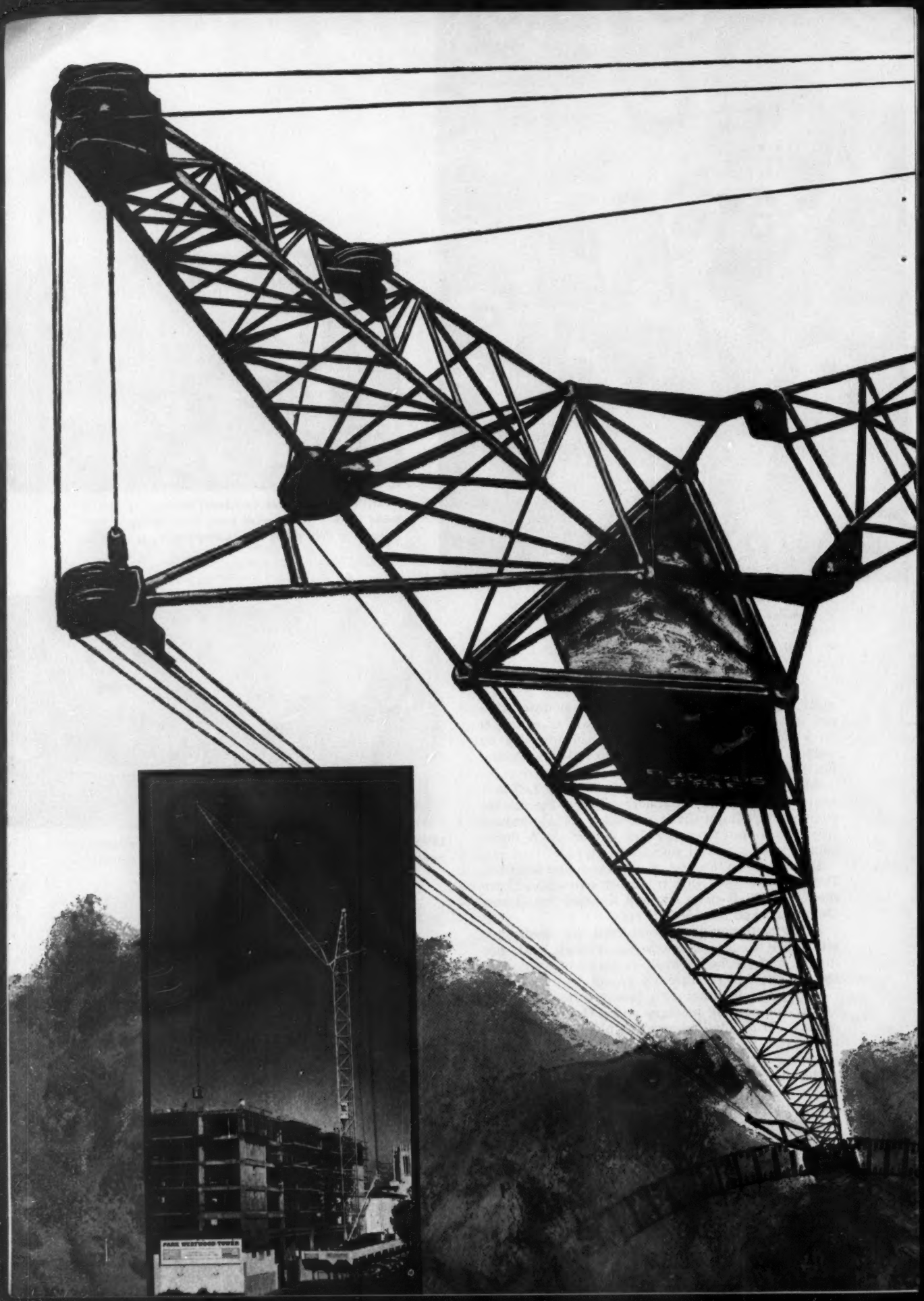
The plant includes two jaw crushers—a Universal Engineering primary and a Cedarapids secondary. Trucks will charge the plant from a nearby borrow pit, and an elevated hopper will load the crushed gravel into trucks that will haul the material to the job site.

Earthwork is scheduled for completion this year, and bituminous paving will be completed next year.

Project manager for Perini Corp. is Warren Pettingill. Superintendent is Silas B. Hayden, and Charles Austin is engineer. For the New Hampshire Dept. of Public Works, resident engineer is Lawrence White, and Eldon Bennett and Norman Barbin are assistant engineers.

LEVELING FILL—A rubber-tired dozer levels fill after scrapers spread their loads. Scrapers and dozers compact fill material.

CRUSHING SUBBASE—Crushing that will produce gravel is equipped with two jaw crushers. Elevated hopper will feed trucks.


PARK WESTWOOD TOWER

MARK I-50
TOWER CRANE

HOW BIG
HOW DIFFERENT

The Mark I-50 Tower Crane can out-reach, out-speed and out-work any tower crane in the world — by far. Check these facts.

Lifts two tons at 400 ft. per minute. Easily handles 1½ yd. concrete bucket.

Makes deck pours at elevations as high as 230 ft.

Lifts 5,300 lb. at 123-ft. operating radius.

Built in America to American standards of safety and reliability. Meets American Electrical Codes.

Write for complete information, or let your Bucyrus-Erie distributor show you the many other reasons why the Mark I-50 will also earn more and save more on most large building projects. Bucyrus-Erie Co., South Milwaukee, Wisconsin.

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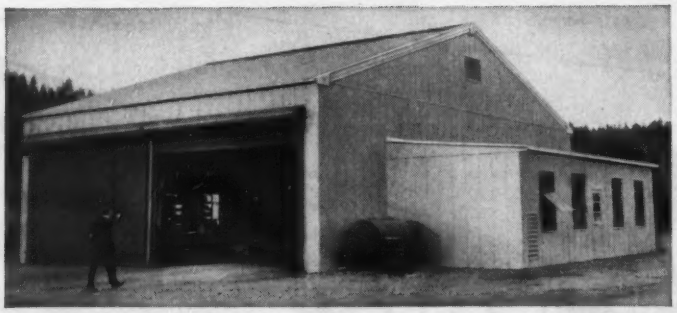

MAINTENANCE BUILDING At Frenchman's Dam of the Feather River Water Project, California, this Armco maintenance building is used by the Isbell Construction Co.

For Offices or Construction Tools...

New Armco Steel Buildings Offer You More Value

OFFICE This attractive Armco Building serves as an office for Shaver Construction Co. of Winnipeg, Manitoba. Note inexpensive entrance and masonry veneer wall.

Armco's new line of buildings can be as attractive or as functional as you wish — at low cost. Check these NEW highlights: new series of single-slope roof buildings; new choice of gable roof designs (2:12 and 4:12 pitch); wider spans (up to 120 ft.); new wall panels with handsome sculptured effect; and new insulated interior wall panels.

As offices and shops, Armco Buildings give you permanence. Yet, at construction sites, you will like the ease of dismantling these buildings for complete salvage and re-use. For complete details, write us for a copy of the "Armco Building Catalog." Armco Drainage & Metal Products, Inc., 4321 Curtis Street, Middletown, Ohio.

ARMCO Drainage & Metal Products

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Circle 138 on Reader Service Card

LAYING A BASE FOR GEORGIA TECH'S REACTOR, SIX PIECES OF EQUIPMENT POUR CONCRETE FOR 12½ HR.

Equipment Encircles Round Pour

Cranes, trucks and chutes solve access problem during a 1,300-yd continuous pour.

THE READY-MIX TRUCKS started rolling in before 5 a.m., just as first light glowed over Atlanta's hills. By full daylight two cranes were swinging their buckets over the pour. And 12½ hr later, 1,337 yd of concrete had been shoved into the big hole in the ground.

The giant slab is a floor for Georgia Institute of Technology's $3-million atomic reactor. It is 7-2/3 ft thick and 82 ft in dia, and specifications required that it be poured in one continuous operation. A cold joint would have meant tearing up the slab and starting all over again.

And the pour had other complications for the general contractor, Blount Brothers Construction Co. of Montgomery, Ala. Only half of the circumference of the form could be reached by truck or crane. Bordering 180 deg of the reactor bed is a dirt bank that rises 20 to 40 ft above the slab.

This bank couldn't be shaved off without risking a cave-in of private property next to the job site. And the bank was too high and too irregular to permit digging in a crane on the top of the hill.

continued on next page

Chutes Shoot Mix Down Slope

STATIONARY CHUTE—Concrete sluices 40 ft down fixed chute, then is distributed by an extension movable through 80-deg.

MOVABLE CHUTE—Trailers on plank runways permit sideways movement of second chute. Above, mix pours down its lined trough. Below, chute rolls to new position.

EQUIPMENT ENCIRCLES ROUND POUR . . .

continued

Blount Brothers' job superintendent Charlie Smith solved the site problem with a pouring layout that fed concrete from six locations around the reactor's rim. On the north (accessible) side, two cranes operated 30 ft apart. Between the cranes was an alleyway for ready-mix trucks that unloaded directly into the pour.

On the northwest side another alley was bulldozed, allowing other trucks to unload directly into the form.

On the sides where the high banks defied direct access, Smith placed two chutes—one stationary and one movable.

With that gather- 'round-the-circle setup, Blount Brothers' crew poured better than 106 yd per hr during the long day's work.

One of the cranes was a P&H, model 555-A, 35-ton unit with 65-ft boom and 35-ft jib. This crane worked with two 1½-yd buckets. While one bucket was over the pour, a ready-mix truck was filling the other bucket at a location behind the crane.

The second crane was a P&H, model 355-C, 25-ton machine with 65-ft boom and 20-ft jib. This smaller crane worked in the same manner with two 1-yd buckets. Both cranes were rented from Superior Rigging & Erecting Co., Atlanta.

On the other side of the circle, the two chutes sluiced concrete to the pour at a rate that kept the ready-mix truck drivers hopping.

On one slope was a stationary 2-ft-wide chute lined with 26-gage galvanized metal. This chute carried concrete from a ready-mix truck down 40 ft to the pour. The chute was framed with ¾-in. plywood, supported by 2x4-in. timbers on 16-in. centers. Down the top half of the slope, the chute was supported by wooden bucks. The bottom half was shored with tubular scaffolding.

At the bottom of the chute was a 10-ft extension that could be swung in an 80-deg radius by knocking out a few nails and re-tacking in a new position.

The second chute, also metal-lined, was 4 ft wide, 40 ft long. It was supported in four places: at the top of the bank, on two scaffolds on cuts in the bank, and on a scaffold frame at the pouring level.

This entire chute was movable as much as 40 ft from side to side. At its bottom the chute was supported by Richmond, 1½-in. tubular scaffolding, resting on 8-in.-dia scaffolding casters.

On the two scaffold levels set into the bank, the chute was supported by two homemade pipe-carrying trailers used previously on the job. The trailers were made of angle-iron frames, one fitted with regular trailer wheels, the other with automobile wheels.

When the chute needed to be moved, a laborer on each level shoved. and the whole chute rolled sideways to the new position.

The bottom of this movable chute reached 12 ft over the edge of the slab. Then a 12-ft extension section was hooked on to give the end of the chute an 80-deg pouring swing. At times, the extension was removed and reversed to direct concrete behind, and underneath, the main chute.

continued on page 143

NEW MORE POWERFUL LE ROI 125 ROTARY

15% more hp and 60% power surplus assure capacity output... improve efficiency... and extend time between engine overhaul.

This new Le Roi 125 Rotary compressor guarantees full 125-cfm air supply whenever and wherever you need it. Thus, you can replace two smaller machines *and operators* with a single 125. And you don't have to waste a larger compressor on jobs where 125-cfm air supply is adequate.

Extra power enables the engine to deliver full capacity at only 1600 rpm — 150 to 400 rpm slower than other makes. This cuts wear on both engine and compressor parts and reduces upkeep. What's more, the use of Stellite exhaust valves and valve seat inserts and positive valve rotators in the engine improves fuel economy and extends valve life.

The new Le Roi 125 Rotary incorporates "double life" reversible rotors, a Le Roi exclusive. Spline couplings assure positive power transfer from engine to compressor and oil pump. Dump valve, minimum pressure orifice, low-oil-pressure cut-out switch, and thermo by-pass valve operate automatically, providing protection against down-time due to accident or neglect.

At 2190 lbs. dry weight, the Le Roi 125 is the lightest compressor in its class. It is designed for easy handling on the site and for fast inspection and servicing in the field. Gasoline and diesel models available on wheel mounts — and gasoline utility model for cross truck bed mounting. PC-101

MORE TOOL SPACE in lockable tool boxes on each side.

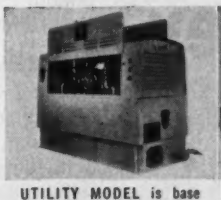
AIR SERVICE valves and hose connections are protected by tow bar.

LIFTING BAIL permits easy, safe overhead pickup.

PROTECTION against damage in transit assured by mounting radiator and oil cooler at tow-bar end.

REMOVABLE HOOD can easily be lifted off by two men after loosening just 8 cap screws.

OIL SEPARATOR is independent of the receiver and easily accessible for changing separator element.

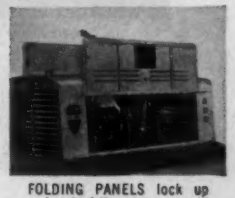


UTILITY MODEL is base mounted . . . all controls and service valves grouped for "curb-side" operation.

SWIVEL TOWING EYE is spring-loaded to ease towing strain over rough terrain and during acceleration.

STURDY THIRD WHEEL easily lifts out of way and locks for towing — no "knuckle-busting."

Ask your Le Roi Distributor for more information. Or write directly to us at the address below.



FOLDING PANELS lock up and out-of-the-way . . . aid operation and servicing.

LE ROI Division of Westinghouse Air Brake Co. Sidney, Ohio

Circle 141 *on Reader Service Card*

UNIT
MODEL 617
"a real money-making rig . . ."

". . . fast and easy to run. It's stable and doesn't bounce around even on jobs like this where we've pounded through most of this rock without resorting to blasting." That's what S. E. Light—a "shovel runner" since 1932—has to say about this ⅝-Yd. Model 617 UNIT trenchoe. Owned by R. R. Blakeman, Los Angeles, the UNIT is digging ditch up to 8′ deep and 36″ wide for a new storm drain. Tough digging conditions were taken in stride—hard adobe mixed with rock.

UNITS are fast because a unique *direct-in-line drive* provides power where it's wanted and when it's needed. Engine power is transmitted to the main machinery in an even and steady flow through a worm-driven power take-off with a "one step" speed reduction. There's little power loss through friction.

UNITS are easy to run because *disc-type operating clutches* provide fast, smooth response. There's no jerking or grabbing as clutches are engaged and disengaged.

UNITS are stable . . . don't "bounce around". The combination of *hook and turntable rollers* insure stable operation with long booms or digging attachments. With the crawler frame assembly constructed of husky side-frames and H-beam axles, the shocks and strains of heavy-duty work are easily absorbed; perfect balance and operating stability are provided.

To find out more about a UNIT, contact your nearest dealer. He'll be glad to give you complete details on any or all sizes.

SHOVELS: ¼ Yd. to 1 Yd. • CRAWLER CRANES: 6 Ton to 22 Ton •
DRAGLINES: ½ Yd. to 1 Yd. • TRENCHOES: ½ Yd. to 1 Yd. •
TRUCK CRANES: 10 Ton to 40 Ton

UNIT

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Milwaukee 19, Wisconsin

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EQUIPMENT ENCIRCLES ROUND POUR . . . *continued*

On the big pour, Superintendent Smith used a crew of 12 laborers, one carpenter and one labor foreman. One laborer worked behind each crane, filling a bucket, switching the crane hook from the empty to the full bucket. One worker handled the unloading for each crane's buckets. And two more laborers handled the two chutes.

Five workers manned vibrators. Two of the units were Master electrics, one a model 4-U developing 9,500 rpm, and the other a model 1-U, developing 7,200 rpm. Two vibrators had Universal heads operating at 9,500 rpm, powered by Master 5-hp model 4-U gasoline motors. The fifth unit was a Champion electric, model 60-110, running at 10,000 rpm.

Pouring crews used a system of pipe guides to establish the right screeding level. Pieces of light conduit were tack-welded on 4-ft centers to the top mat of the reinforcing steel. Then, a top (cradle-head) portion of a Universal adjustable screed chair was inserted into each piece of conduit.

Lengths of 2-in. pipe were laid in the cradle heads and brought up to grade by turning adjustable nuts on the heads. Workmen slid a large wooden screed along these pipes.

Concrete was 3,000 lb with ¼ lb Pozzolith per sack. The slab was poured on a 4-in. slump.

Main form of the slab was the 7/16-in. steel plate that is the outside of the reactor-containment

continued on page 146

BUCKET SWAP—As a crane pours a bucket, a second is loaded at this station. Here, an empty bucket is exchanged for a full one.

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Mack-drawn hoppers at the pit are loaded with 25 tons of aggregate. They haul steadily on 9-hour shifts.

Rolling out of home base at Greenville, Ohio, one of American Aggregates' Mack tractors delivers electrical equipment for a subsidiary company, Greenville Mfg. Works.

At American's Ft. Jefferson ready-mix plant Mack mixer units take on 6-yard loads of concrete for local delivery.

Where performance counts—

Moving big tonnage for American Aggregates Corp.

Throughout the Ohio Valley, the Mack trucks of American Aggregates Corporation are a familiar sight. In addition to being the country's largest sand and gravel suppliers, the company manufactures diverse products ranging from ready-mix concrete to electrical equipment. These broad operations have one thing in common—a reliance on Mack trucks and tractors to handle the many and varied hauling assignments.

Says American Aggregates' president, Mr. Edward Hole, "We've used Macks for over 20 years, so we speak from experience when we say that these trucks are capable of handling efficiently any hauling job we've ever tackled. Their performance is tops wherever we use them, and there's never been the slightest question about their durability, ruggedness and economy—4 mpg on our gas units and 7 mpg on our diesel-powered models."

American Aggregates' Ft. Jefferson sand and gravel operation is a model of efficiency. Bottom dump trailers hauled by Mack B60 series tractors, run 25-ton loads of aggregate over well kept haul roads from pit to processing plant on a 9-hour-a-day schedule . . . average nearly a quarter of a million tons a year. After processing the aggregate, Mack dumpers make deliveries to customers and to American Aggregates' big ready-mix operation where 6-yard Mack mixer units handle concrete deliveries.

Modern, efficient, high-volume operations like these depend on modern efficient equipment to keep operating costs low. Macks contribute to high efficiency because of their outstanding performance characteristics. Mack Thermodyne® gasoline and diesel engines provide plenty of power for fast get-aways under full loads. Traditional Mack construction throughout reduces downtime and maintenance.

These are basic reasons why Macks are first choice where profitable operations rely on truck performance . . . why a Mack will pay for itself again and again by delivering top work capability per dollar invested. Your Mack representative is qualified by knowledge and experience to help you determine the Mack models that most economically meet your trucking needs. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

MACK
FIRST NAME FOR
TRUCKS

MACK for over 8 straight years NO. 1 by far in sales of diesel trucks

Circle 145 *on Reader Service Card*

VIBRATING—One of five vibrators on the job settles concrete below the upper mat during the continuous 12½-hr, 1337-yd pour.

shell. But regular formwork had to be constructed for an irregular, "rocking-horse"-shaped void left in the southeast quarter of the slab. The 2,000-sq-ft void will house the reactor's expansion chamber.

Formwork for the chamber was ¾-in. plywood, backed with 2x4's on 16-in. centers, and braced horizontally with 2x4's on 4-ft centers.

Further bracing came from #9 black annealed wires running diagonally through the slab, tied at bottom to the reinforcing mat, and at tops to 2x4 walers inside the form. The void in the big slab caught plenty of runoff water from the pour. It was removed with a Jaeger 5-K submersible electric pump of 3,000-gph capacity.

Reinforcing steel for the big slab was formed with top and bottom mats of #9 bars on 8-in. centers, running in both directions. Top mat was supported with #8 rods. The slab contained 92 tons of reinforcing steel.

A circular, steel-shell containment building will be erected on the base. Completion of the reactor job is scheduled for late next year.

Men on the Job

Charles W. Smith is job superintendent for Blount Brothers. Wilhoit Steel Inc., Columbia, S.C., is placing reinforcing steel, and ready-mix concrete is supplied by MacDougald-Warren Inc., Atlanta. Sam P. Wallace Construction Co., Dallas, Tex., is the mechanical contractor installing piping.

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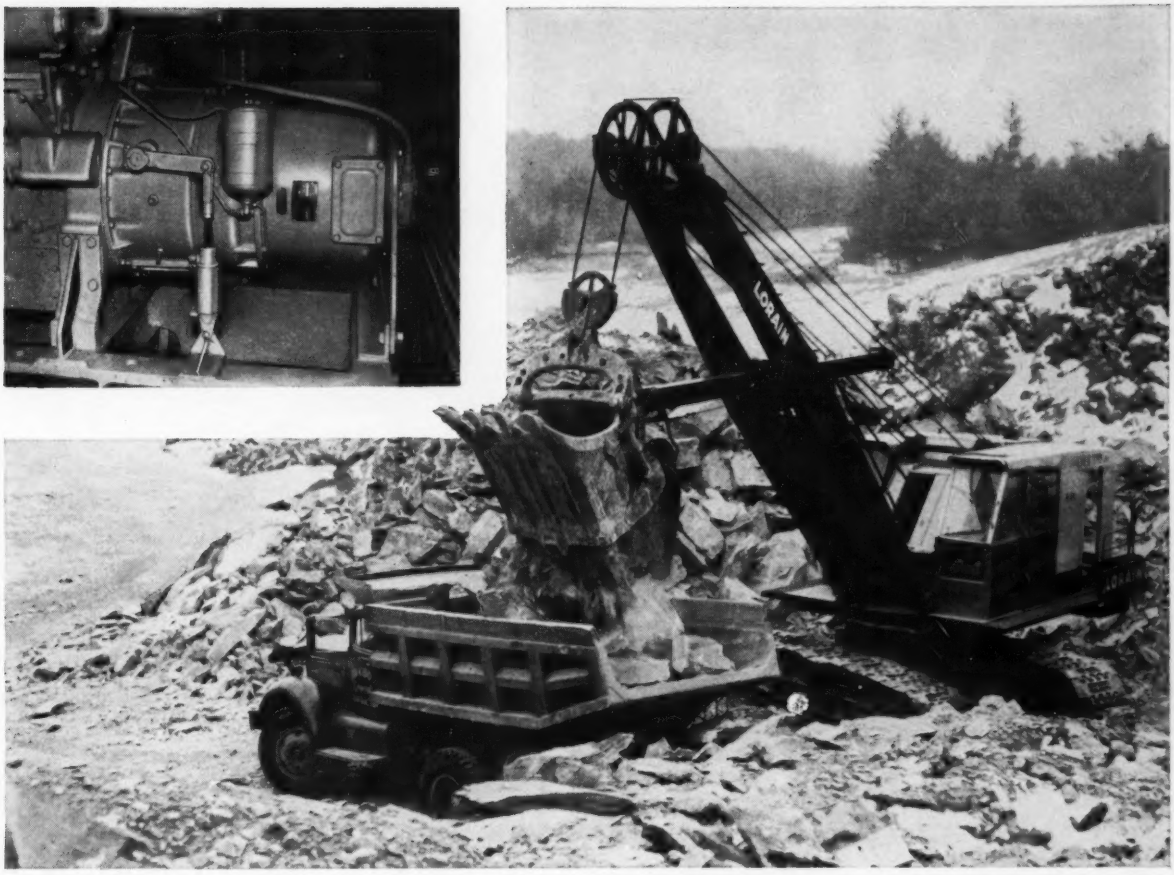

No Stall or Shock in the Roughest Rock!

Twin Disc Torque Converter pays off on Massachusetts dam-building project

"A job like this really makes you appreciate the advantages of torque converter drive," says T. W. Kidd, Jr., Fall River (Mass.) contractor.

Mr. Kidd's Lorain 85-A Shovel, powered by a Caterpillar Diesel driving through a Twin Disc Torque Converter, was given the rugged assignment you see pictured above. The 2½-yd. shovel had to chew through an 80,000 cu. yd. rock ledge during construction of Hodge Village Flood Control Dam, a $1,800,000 U. S. Corps of Engineers project at Oxford, Mass.

The ledge cuts are 10 to 40 feet deep, 20 to 60 feet wide, and 1800 to 2500 feet long. When the dam is completed, these cuts will become spillways and diversion channels. The excavated rock is being used for rip-rap.

When Mr. Kidd talks about torque converter advantages in rock digging, this is what he means:

- The converter eliminates lugging and stalling . . . permits the engine to work in its maximum efficiency range *all* the time.
- An infinite number of ratios is available to work with, assuring smooth, accurate crowd control.
- Up to twice normal torque is delivered to the drum, even at slow digging speeds.
- Fluid within the converter absorbs much of the impact energy imposed upon the drive line . . . thus protecting both driving and driven equipment and extending cable life.

Put these advantages to work on your jobs . . . specify Twin Disc Torque Converter Drive in your new or repowered shovel.

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POWER TRANSMISSION EQUIPMENT

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The new H.D. 1" No. 482 Air Impact Wrench, the mighty big one, is intended for the kind of jobs that tear up ordinary 1" wrenches.

SIOUX Air Impact Wrenches deliver up to 15% more torque while consuming 30% less air!

SIOUX Electric Impact Wrenches such as the No. 330 illustrated, deliver the extra measure of efficiency, performance and freedom from trouble you expect from SIOUX.

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WHEN IT'S A SIOUX YOU KNOW WHAT IT WILL DO—SIOUX tells you the torque your air or electric impact wrench will deliver. Don't buy just a wrench. Buy certified SIOUX power!

The No. 270 SIOUX Slugger is an all purpose metal working tool. It cuts metal, breaks spot welds, splits nuts, shears bolts, punches out pins, and scrapes metal clean.

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the SWENCH® is a wrench like no other — and will work where no other can. It's the world's first manual impact wrench. Loosens frozen nuts and bolts in seconds . . . tightens with precise accuracy every time. SWENCH is completely portable . . . needs no outside power — yet multiplies torque many times. It safely handles more bolt sizes than any comparable power wrench, but costs less. Read how you'll save with the SWENCH:

SWENCH® speeds repair jobs for trucking firm

In every truck servicing garage, like one operated by a big mid-western trucking firm, transmission and differential repairs are common — and tough.

Removal of the nut from the differential torque divider or transmission used to take two men from 2 to 3 hours with a wrench and sledge and usually the nut was damaged beyond use.

Then, along came the SWENCH. One man — as few as 4 impacts and the nuts are off — loose in minutes instead of hours . . . undamaged. Figure what the SWENCH can save you with the same kind of performance!

The hand-operated SWENCH works anywhere — carries its power built in. Exerts many times the energy needed to pull the handle — gives you more power with greater safety — even in hard-to-reach spots.

Six models cover bolt sizes from ½" to 2½". For the full story on SWENCH, how it works, what it costs, how it saves, see you local distributor, or write:

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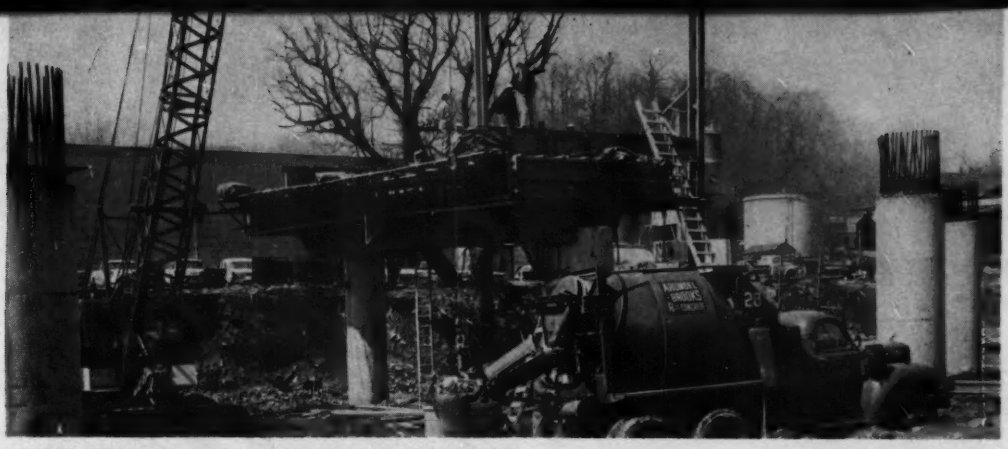
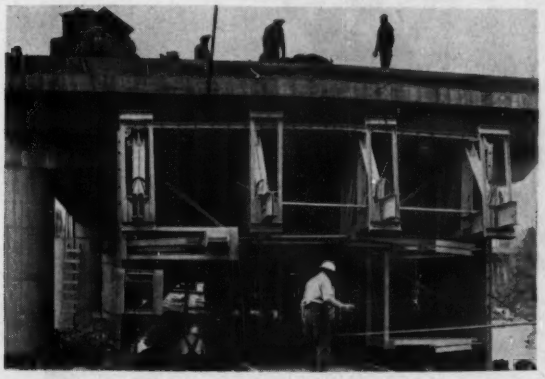


HEADER FIRST—Crane places concrete into prefab header form made up of 18 sections that bolt together. Crew erects form with winches, positioning it on pins atop twin columns of bridge pier.

THEN DECK—Self-supporting 42-ft-long deck form hangs from headers. Swampy ground ruled out timber falsework.



ON THE MOVE—With 10-ft-wide side panels folded down to clear columns, collapsible deck form rides atop rail car to next bay. Timber cribbing holds forms; winches pull job-built car along track.

Steel Forms Outbid Timber

SELF-SUPPORTING STEEL FORMS are keeping the contractor's feet dry on an elevated section of Baltimore's Jones Falls Expressway.

Case Construction Corp. of Mt. Airy, Md., is building two overpasses totaling 2,400 ft in length in a swampy ravine that cuts through the heart of the city. Each bridge consists of a 27-in.-thick flat slab deck supported by piers made up of twin columns and a header. Each span is about 60 ft.

Because of poor footing under the bridges, Case ruled out conventional timber shoring and forms. Even though the deck slab is perforated by cylindrical voids, its weight would require extremely heavy falsework. Instead, Case is using two sets of Blaw-Knox steel forms to do the job. Cost of the one-shot forms is $80,000.

Each set consists of a deck form and a header form. The deck forms measure 44 ft wide and 42 ft long and weigh 62 tons each. The header forms are the same width as their companion units, but are 24 ft long and weigh 30 tons.

The deck forms are single, truss-supported units that hang from rods anchored in the previously concreted header of the adjacent span. Hinged 10-ft-wide panels fold down at the outside of each deck form to permit movement from bay to bay. Timber cribbing atop a special rail car holds the form unit during the move. A crane-operated winch pulls the car along the rails from bay to bay.

Each of the header forms breaks down into 18 major components. They are erected piece by piece with manually operated winches. The forms are bolted together and positioned on pins in the piers. The deck forms are hoisted into position by eight winches. Then the hinged side panels are raised and secured with pins.

Two cranes with 2-yd buckets place the transit-mix concrete in the deck and header forms. Each deck span takes about 110 yd of concrete; each header about 98 yd.

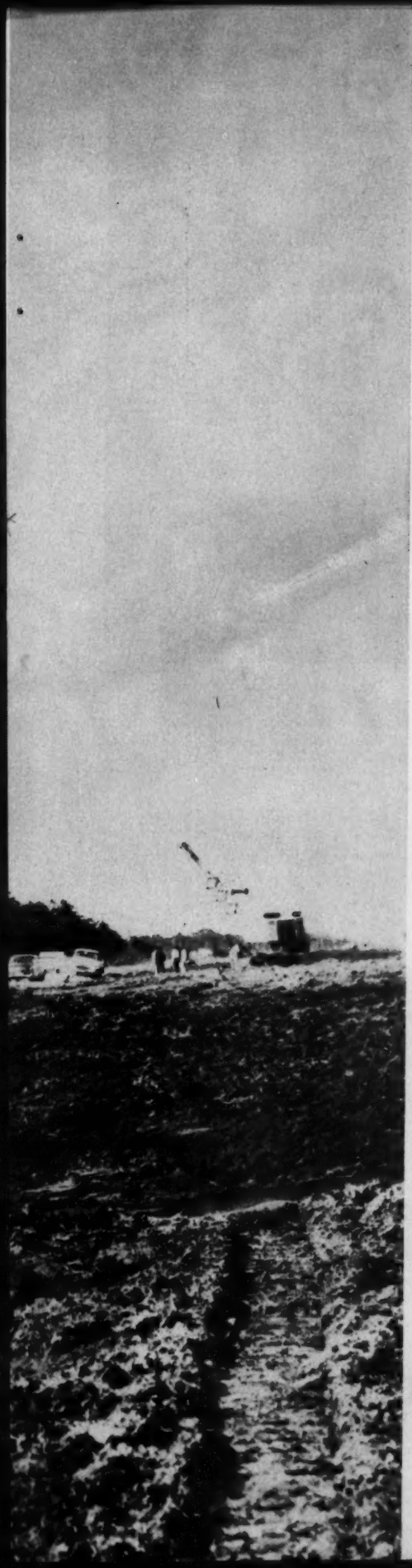
Form Move Takes One Day

Case's crew lowers, moves and re-erects a deck form in one day. It takes half a day to install reinforcing and another half day to pour concrete. The forms remain in place for seven days while the concrete cures. In one eight-week period, Case completed six bays and twelve headers.

The contractor estimates it would take a week to install conventional timber shoring and forms for a single span. Thus, the prefab steel forms offer a saving of about four days labor per use.

Roy Young is project manager for Case. Graham Hevell is project engineer and Paul Schelling is office manager. Rex Cable is resident engineer for Knoerle, Graef, Bender and Associates, Inc., consulting engineers of Baltimore.

BUCYRUS
ERIE
22-B



TIGER ON THE SPOT AT MOBILE'S WRAGG SWAMP

USS Tiger Brand Wire Rope withstands biting sand and muck digging drainage canal

Land that was once a swamp will soon be used for housing developments and golf courses in Mobile, Alabama. An estimated 900,000 cubic yards of muck, sand and clay were gouged out of Wragg Swamp to create a new $1,400,000 drainage canal five miles long.

Here at work are some of the draglines and pile drivers . . . all are rigged with tough, rugged USS Tiger Brand Wire Rope. This job really puts wire rope on the spot. Dragged through biting sand, soaked in water, subjected to sudden shock loads, it takes a terrific beating. That's why sub-contractors Bernard & Byrd rely on USS Tiger Brand—America's No. 1 Wire Rope—for low wire rope costs.

USS Tiger Brand Wire Rope is a top-quality product. Specified standards are maintained for every step of production. Plant facilities are unsurpassed in the industry. These facilities, along with one of the finest staffs of wire rope engineers in the country, assure wire rope with complete dependability, long service life and maximum economy.

Whatever the equipment—whatever the purpose—you'll find a USS Tiger Brand Wire Rope designed to meet your most exacting needs. And there's a Tiger Brand Field Service Representative near you to help you make the best selections. Call your local Tiger Brand Distributor for information or write American Steel and Wire, Dept. 1284, Rockefeller Building, Cleveland 13, Ohio.

USS and Tiger Brand are registered trademarks

USS Tiger Brand Wire Rope resists shock and impact loads on this pile driver.

◀ Sand and muck combination creates a severe abrasion problem. USS Tiger Brand Wire Rope takes this rough service in its stride and provides greater operating economy.

Section of Wragg Canal designed to handle 6,500 cubic feet of water per second. Five machines are shown digging this canal—all rigged with USS Tiger Brand Wire Rope. Engineers: J. B. Converse & Company. Prime Contractors: Laidlaw Contracting Co., Flaco Corp. and M. C. Farmer. Subcontractor: Bernard & Byrd.

American Steel and Wire Division of United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
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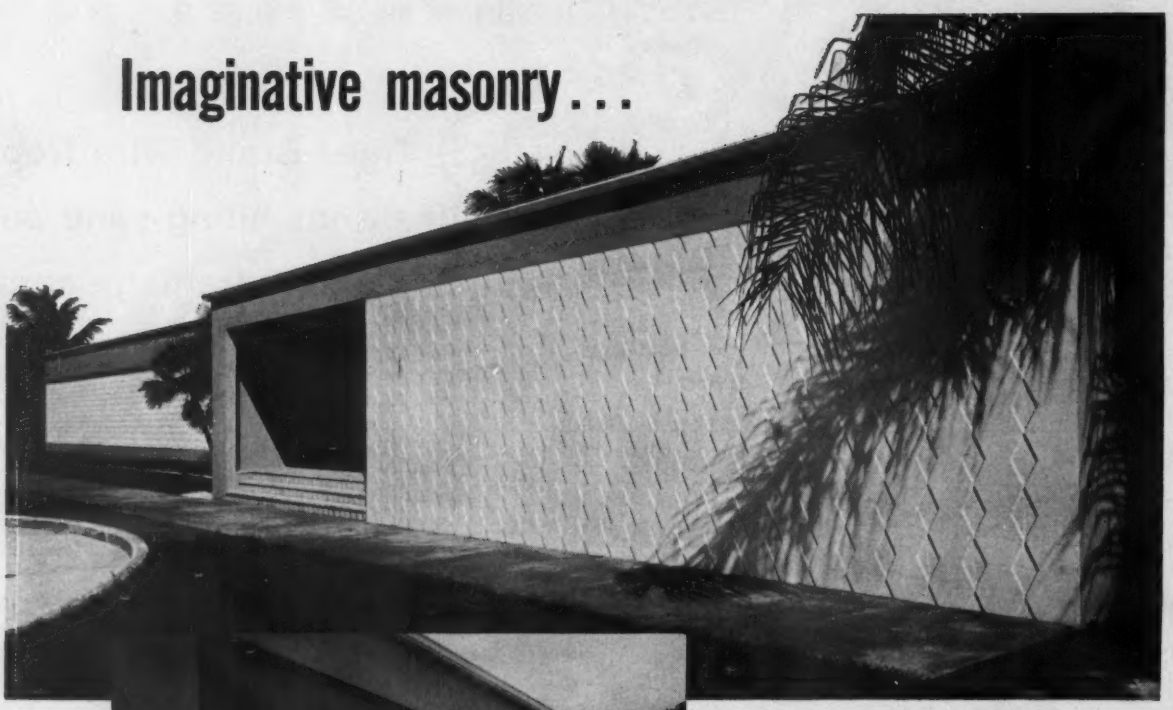
This mark tells you a product is made of modern, dependable Steel.

Imaginative masonry...



Meekins, Inc., manufacturers of concrete masonry units, had this new headquarters designed to show the architectural possibilities of their products. Lehigh Mortar Cement was used to lay up the units.

Precast concrete risers, floor units and hand rail were used in this attractive entrance. Prestressed double tee units for the roof made this an all-concrete building.

• Inside and out, this attractive commercial building is all concrete. The designer blended a variety of masonry units—such as shado-wal, solar screen, ordinary block—into an interesting, functional structure.

More and more, architects and builders are developing the exciting design possibilities of modern concrete masonry. Today's array of strong, light units in myriad sizes, shapes and textures serves both structurally and decoratively—in all types of buildings.

And remember, when you build with concrete masonry, use Lehigh Mortar Cement. Its plasticity and workability make it easier for masons to do a good job — help assure clean, strong, weathertight walls.

Lehigh Portland Cement Company, Allentown, Pa.

Screen block gives needed protection from sun's glare. At night screen is back-lighted with colored lights. Lehigh Early Strength Cement was used in the manufacture of all units.

LEHIGH CEMENTS

Owner: Meekins, Inc., Hollywood, Fla.
Architect: Kenneth J. Spry, Hollywood, Fla.
Contractor: Ralph S. McComiskey, Hollywood, Fla.

Check Safety At Your Highway Construction Site

If a car or truck has an accident on your construction site, your liability insurance premiums may go up thousands of dollars. Here is a check list to help you run a safer job.

By ROY D. WOODWORTH, Supervisor, Construction Service, Liberty Mutual Insurance Co., Boston

THE SAFETY check list shown on these pages could save you thousands of dollars.

It is based on a study of more than a thousand bad accidents involving public vehicles driving through highway construction jobs. The list tells how to prevent such mishaps and can be used as a guide for inspecting safety at your road site.

Accidents by public traffic can be costly to a contractor in many ways. One important result is that liability claims force his insurance company to hike premiums by thousands of dollars. This is true because payments vary with the insurance company's rating of each contractor's individual safety record. A contractor who consistently runs a safe job receives a break in premiums. One with continuing accidents—and claims—pays more. (A safe contractor also gains because he usually qualifies for lower workmen's compensation rates.)

More money is sapped from the unsafe contractor when there is accident damage to his equipment or the work he is erecting. Confusion is created and work schedules are sabotaged. Labor, time and materials are needed for repair and replacement.

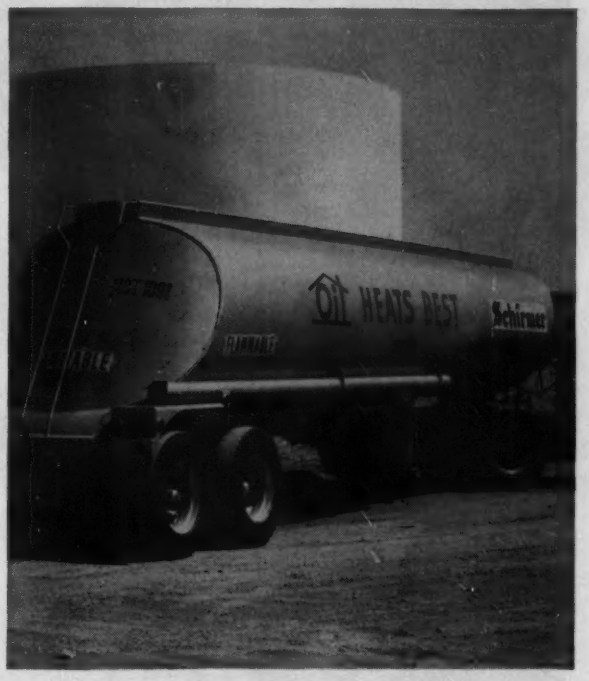
A subtle but potentially disastrous side effect of public liability mishaps is the harm to the "unlucky" contractor's reputation. Word of repeated accidents spreads to the local population and to the construction industry.

Besides pinning down causes of common accidents, the long-term study revealed that road building mishaps are more varied than those in other types of construction. The reason is probably due to the many types of equipment, the wide variety of hand and machine operations, and the changing conditions found on such projects. At any rate, there are more dangers to watch for.

The study also uncovered the sober fact that negligence by contractors' own men is responsible for more than half the public liability accidents on highway jobs. This means that for a construction job to be safe, a contractor must put a definite

1,200 gallons more payload

with tank trailer made of Kaiser Aluminum



"We get a 6 per cent to 12 per cent gallonage increase over comparable steel units," reports Mr. Lloyd Schirmer, President of the Schirmer Transportation Co. Clean, non-sparking aluminum also gives this tanker extra strength, reduces maintenance cost and simplifies cleaning. The model shown here, made by the Independent Metals Division, Fruehauf Trailer Company, Detroit, more than earns its keep for Schirmer Transportation Company, St. Paul.

MEMBER ATA TRANSPORTATION AMERICAN TRUCKING INDUSTRY

KAISER ALUMINUM

New Leadership In The World Of Aluminum

And... Payload Pete points to still more profits! Please turn page...

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trenching 30,000 ft. in blasted granite

Hard digging hampered this job seriously — until AMERICAN POSITIVE-PRESSURE BACKHOE turned the tide

"We could have saved 45 days if we had this machine when we started this job," says the super for R. G. Rezin, Inc. (Tomah, Wisconsin). The contract covered 30,000 feet of sewer line in Tigerton (Granite Village), Wisconsin. So tough were conditions that several blasting companies walked away shaking their heads, refusing to bid. It's *this* kind of job AMERICAN POSITIVE-PRESSURE backhoes *like*. It gives them a chance to *prove* they keep jobs moving where other rigs waste time slicing and chopping away.

Behind it all: AMERICAN's exclusive POSITIVE-PRESSURE digging action. As you start inhaul, POSITIVE-PRESSURE attachment automatically holds boom down . . . puts almost entire weight of the machine behind every bite. You boost output in shale, hardpan, frost, deep trenching — or for that matter, under any conditions. POSITIVE-PRESSURE is simple and completely automatic. No powered mechanisms of any kind. Available on all AMERICAN backhoes, ½ to 4½ yds. Learn more about it . . . now!

B-723

WITH AMERICAN'S EXCLUSIVE POSITIVE-PRESSURE BACKHOE you utilize almost *entire weight of machine* to penetrate hardpan, shale or deep frost. Boom *can't* ride up during inhaul. You eliminate chopping . . . reduce caving . . . save wear and tear. You increase output in easy materials too . . . get bonus yardage . . . *especially* on deep trenching.

EXCAVATORS ½ to 4½ yds.	DERRICKS-HOISTS to 800 tons	FORGED FITTINGS FOR WIRE ROPE AND CHAIN (Crosby-Laughlin Div.)
CRANES 12½ to 110 tons	REVOLVER CRANES to 400 tons	

AMERICAN

AMERICAN HOIST and DERRICK COMPANY
ST. PAUL 7, MINNESOTA

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SAFETY CHECK LIST...
continued

safety program in motion. The contractor, his superintendents, foremen and crews all must be convinced of such a program's value and help make it work. No check list as the one given here, or any other safety guide, can do the job alone.

Highway Construction Site Safety Check List

A. These accidents by public vehicles produce heavy liability losses—

1. Colliding with contractors' equipment
2. Colliding with poorly marked barricades or signs
3. Driving into open trenches and excavations (Pedestrians falling into these is another danger.)
4. Skidding into work areas
5. Loss of control because of soft shoulders or other unseen road hazards.

B. Follow these precautions in transporting equipment to the site—

1. Learn and obey all state laws governing equipment movements
2. Obtain necessary movement permits
3. Respect weight limits for highways and bridges
4. Plan traffic routes to avoid height obstructions, dangerous intersections, sharp turns, heavily populated areas, etc. Prepare a map for drivers showing hazardous points that will be encountered
5. Avoid overhanging loads. Attach warning flags to loads that must extend
6. Secure ends of chains so they won't swing free
7. Lash all loads to prevent shifting.

C. Unloading equipment at job site—

1. Provide warning to motorists by using flagmen, signs, barricades, flashers, flares, etc.
2. Avoid unloading equipment near crests of hills
3. Remove trailers and prime movers from highway as soon as possible after unloading is completed.

D. Daytime parking of equipment—

1. Park completely off the road and shoulder, especially if the road is open to traffic
2. Lower all buckets, blades, cranes, etc., to the ground before leaving the equipment
3. Chock all wheels if it is necessary to leave equipment on grades.

E. Night and weekend parking of equipment—

1. Move idle machines away from roads and shoulders. Park them as inconspicuously as possible to avoid distracting passing drivers
2. Illuminate all barricades near equipment with flashers, flares or other warning devices

continued on page 159

2200 pounds more payload

with dump trailer made of Kaiser Aluminum

"We obtain $7 to $10 increased profit per day thanks to aluminum's payload bonus," says enthusiastic John Chutz, president of The Tajon Trucking Company, coal haulers of Mercer, Pennsylvania. Tajon operates a fleet of the all-aluminum dump trailers manufactured by the Penn Body Division of the Hockensmith Corporation. Because both body and chassis are made of aluminum, each unit weighs in at only 8300 pounds as opposed to 10,500 pounds for an equivalent steel unit. MEMBER ATA TRANSPORTATION AMERICAN TRUCKING INDUSTRY

KAISER ALUMINUM

New Leadership In The World Of Aluminum

And... Payload Pete points to still more profits! Please turn page...

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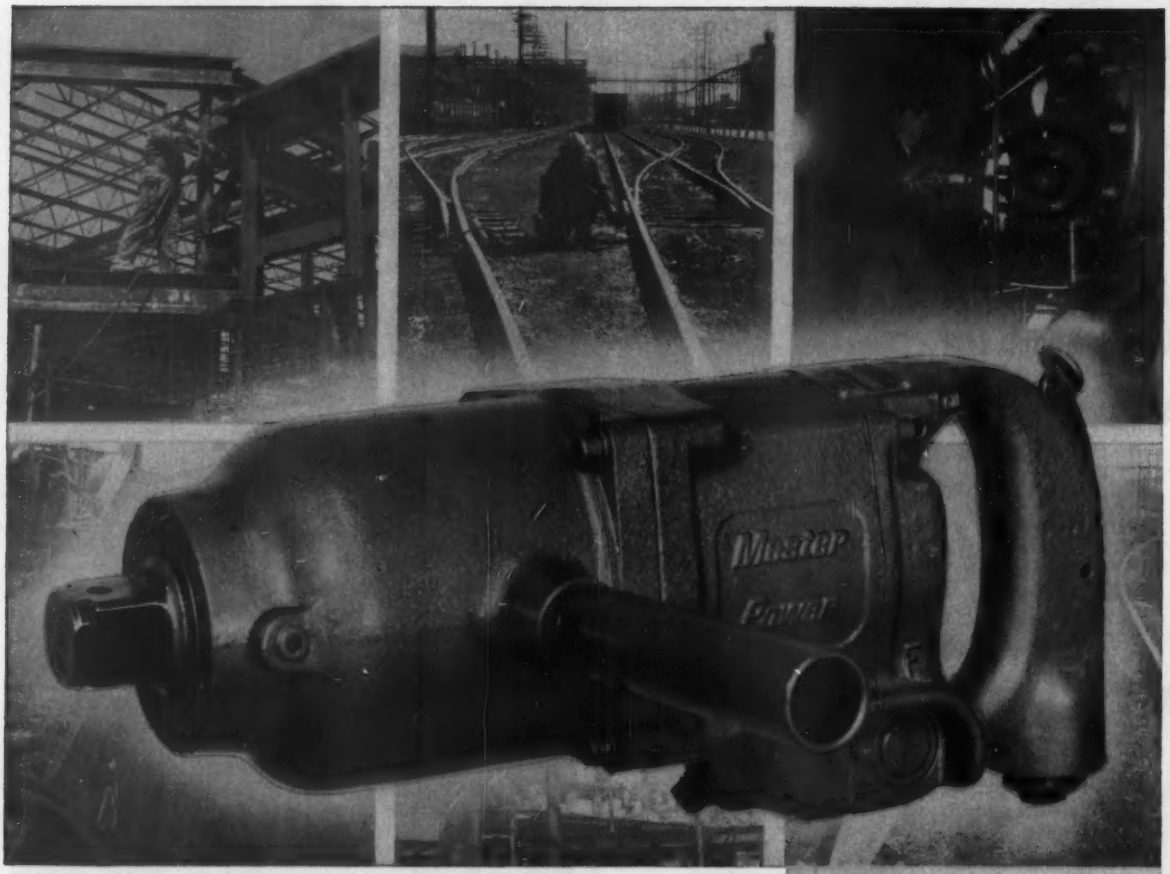

FEATURES OF THE ALL-NEW MASTER POWER 990 IMPACT WRENCH

- For 1¼" high-tensile bolts
- Weighs only 21 pounds
- New "roll-action" engages and disengages impact mechanism
- Popular, protected, push-type reverse valve
- Compact design gives greater maneuverability.
- Hardened, wear-resistant motor end-plates and liner.

NEW LIGHTWEIGHT CHAMP FOR HEAVY-DUTY WORK

This new Master Power 990 Impact Wrench went to work more than a year ago in shipyards, steel mills, rail yards, on off-the-road equipment, on steel erection and truck assembly. The toughest kind of work in the roughest environments. Our documented performance data is your proof that the new 990 delivers ultimate power, positive engagement, maximum life.

A combination of "roll action" and precision-engineered, cam-timed impact mechanism gives you a tool with no springs, no snap rings, no lost motion. The tried and proved ball-and-race principle of smooth, almost frictionless rolling action engages and disengages impacting blows with precise timing. The powerful air motor and clutch hammer are independently suspended on heavy-duty bearings. You get positive, full engagement regardless of power input. Result: A compact, light weight (21 lbs.) tool doing up to 1¼" high tensile bolting with less vibration, less torque to operator. Its simplified design permits assembly and disassembly with ordinary tools. Try this new tool *now!*

Ask your nearest Master Power distributor for a demonstration or write us for complete performance information.

Leading Distributors Everywhere

MP **Master Power**

Master Power Corporation • Solon, Ohio
A Black & Decker® Subsidiary

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SAFETY CHECK LIST . . .
continued

3. Lower all buckets, etc., to the ground. Be sure equipment cannot be operated and is secured
4. Chock wheels of vehicles on inclines.

F. **Daytime posting of job—**
1. Be certain all local, state and federal regulations are met
2. Post both ends of the job well before construction begins
3. Post maximum speed-limit signs on the job where possible
4. Be certain that all signs are free of grime so they can be easily read
5. Mark all hazardous areas with printed warnings
6. Place flagmen where necessary—certain signs need to be enforced. Study hazardous areas (intersections, cross-overs, etc.,) and instruct your flagmen to control dangers peculiar to their areas. Refer to Associated General Contractors pamphlet "Instructions to Flagmen."

G. **Night and weekend posting of job—**
1. Follow items 1-5 in daytime posting. Advance warning signs should be illuminated or reflecting types
2. Provide well lighted, sturdy barricades to prevent motorists from driving into parked equipment or using closed roads
3. Check flashers for proper operation and location
4. Fuel, light and locate lanterns and flare pots to provide maximum illumination. Be sure they can't be upset easily
5. Place flare pots so they outline curves in roads open to traffic
6. Provide added illumination in hazardous areas, near parked equipment, bad curves, signs, etc.

H. **Railroads—**
1. Establish need for railroad cross-overs before starting work at site
2. Brief equipment operators about authorized cross-overs and instruct them to use only these routes. Tell operators to periodically check tracks for damage or accumulation of debris
3. Establish procedures and intruct operators to immediately advise railroad company if tracks or crossings are damaged.

I. **Detours—**
1. Erect a sign "Construction Ahead" 1500 ft in advance of the work
2. Post a double sign 1000 ft from job telling drivers to "Slow Down to 15 MPH" and "Temporary Route 1000 Ft Ahead"
3. Place a "Barricade Ahead" sign 500-300 ft ahead of work area
4. If the closed right-of-way has a route number, post an additional sign no more than 75 ft beyond the start of the detour to indicate the number. (Distances in items 1-4

Sir Payload Pete Offers You This New Booklet:

"NEW ROADS TO GREATER PROFITS"

Send Coupon For Your Free Copy! "New Roads To Greater Profits" is now ready to show you how to increase earning power with aluminum! Twenty pages of profitable facts, figures and application ideas . . . the profit story for aluminum in highway vans, concrete mixers, enclosed truck bodies—and in dump, tank and livestock trailers! This technical data will help you decide how aluminum can best serve *your* needs. (Aluminum is *not* presented here as a "cure-all." But it *is* recommended for the proved applications where its unique properties can produce profitable payload for you!)

Get a copy of "New Roads To Greater Profits" and read all the facts yourself.

Kaiser Aluminum & Chemical
Sales, Inc. Room 848
300 Lakeside Drive
Oakland 12, California

KAISER ALUMINUM
New Leadership In The World of Aluminum

☐ Please send me your free trucking booklet.
☐ Please have representative call. ☐ Phone

NAME_____

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vary with local and state regulations—check them.)

5. Completely destroy any old lane markings no longer valid. Divert such lines into the detour route to aid drivers
6. Erect fence barricades across the right-of-way and the shoulders. These should have diagonal or other distinctive markings in reflective colors. The barricades also should have large reflecting disks, a "Road Closed" sign and an arrow pointing the direction of traffic
7. Place battery-operated flashers, lanterns or other lighting devices to guide drivers during darkness, storms or other periods of low visibility.

J. Burning During Clearing & Grubbing—

1. Check wind velocity and direction before starting a fire
2. Be sure smoke won't obstruct vision or cause discomfort to passing motorists
3. Don't let fire get beyond your control. Locate fire fighting equipment nearby for emergency use.

K. Blasting—

1. In populated areas and near railroads or roads in use, notify your insurance company. A representative might want to suggest ways to minimize blast vibrations
2. Notify all residents in the vicinity before blasting
3. Erect adequate shielding to prevent flying rock from injuring the public or damaging property
4. Stop all traffic close to the work area.

L. Trenching & Excavation—

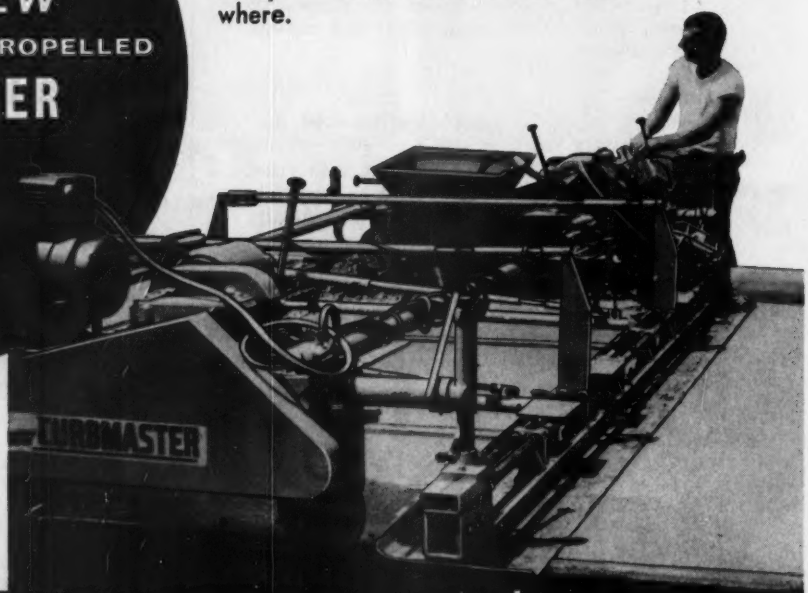
1. Check with utility companies to learn location of underground facilities
2. Mark locations of all such utilities
3. If exact locations are not known, proceed cautiously. Use hand excavation methods when you believe you are near utility lines, etc.
4. Familiarize yourself with local codes for shoring trenches. If these are not available use the AGC regulation for shoring trenches over 6 ft deep having sides that cannot be cut back to a natural angle of repose
5. Adequately support and protect all exposed utilities.

M. General—

1. Stack materials so they will not topple if climbed upon
2. Keep the length of open trench to a minimum, particularly in residential or congested areas
3. Keep all excavations pumped out, especially during weekends
4. Keep spoil piles small, well barricaded and lighted at night
5. Discourage children from playing around the job site
6. Assign watchmen when necessary.

MODERNIZE & ECONOMIZE
with the NEW
ALL ELECTRIC • SELF-PROPELLED
CURBMASTER
SLAB FINISHER

This all-electric CURBMASTER is powered by twin electric motors individually controlled. The machine can be backed up by reversing the directional switch. The electric generator is mounted on the machine but can easily be dismounted to use elsewhere.



Model CMF
ADJUSTABLE TO 21 FEET

The Model CMF strikes off the slab trowel finishes it and builds integral curb at the same time, all from regular curb and gutter forms, with one pass.

CURBMASTER OF AMERICA, INC.
CEDAR FALLS IOWA, U.S.A.

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WORTHINGTON COMPRESSOR NEWS:

PORTABLE COMPRESSOR COMPETITIVE ANALYSIS CHART

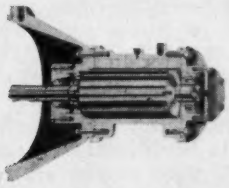
FEATURE OR BENEFIT	MONO-ROTOR	TWO-STAGE	SCREW-TYPE
DESIGN PROVEN IN CONSTRUCTION INDUSTRY	YES	YES	NO
ONE STAGE	YES	NO	YES
SINGLE ROTOR	YES	NO	NO
MAIN BEARINGS	2	4	4
TIMING GEARS	NO	SOME	YES
OIL SEALING	YES	YES	YES
SIMPLE CYLINDER SHAPE	YES	YES	NO
OIL PUMP NEEDED	NO	YES	YES
CRITICAL ALIGNMENT OF ROTORS	NO	NO	YES
TOTAL WEIGHT	LEAST	MORE	MORE
AVAILABILITY	NOW	NOW	?
CLUTCH	YES	SOME	NO
FEWEST PARTS	LEAST	MOST	MORE
MAXIMUM AMBIENT TEMPERATURES	125°	125°	115°
WARRANTY PERIOD	1 YEAR	*90 DAYS	*90 DAYS
FIELD PROVEN	YES	YES	NO

*(USUAL)

ANALYSIS PROVES THAT NEW MONO-ROTOR HAS BEST DESIGN

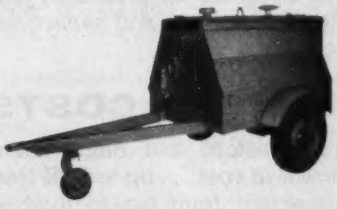
The easiest way to evaluate the compressor designs available today is to draw your own comparison chart. Above is one such chart covering many valid points of comparison between three compressor designs available—the screw type, the two-stage rotary and the new Worthington Mono-Rotor Blue Brute compressor. It clearly shows the new Mono-Rotor's superiority.

The new Worthington Mono-Rotor compressor is built with just one stage . . . just one rotor . . . just two bearings . . . no gears and no oil pump. It is obviously less complex than either of the other designs.



THE MONO-ROTOR HAS 1 ROTOR... 2 BEARINGS...NO GEARS...NO OIL PUMP

What proof of dependability is there for the Mono-Rotor? Over the last three years, this new compressor has been given what is probably the most thorough field testing ever given any compressor introduced to the construction industry. Tests have been so satisfactory that Worthington has extended the Warranty of these units to one full year from the usual 90-day period.



NEW 125' MONO-ROTOR COMPRESSOR

One of the most important points of comparison is the high temperature capability. The Mono-Rotor performs satisfactorily in the up to 125°F temperatures encountered in many domestic and foreign regions.

Note, too, that Worthington retains the clutch in the Mono-Rotor. Not necessary in daily operation, it still is helpful for very cold weather starting—and a real convenience in engine servicing.

Not noted in the chart is the fact that the new Worthington Mono-Rotors are 20% lighter in weight and are designed for improved towing and tracking. The third wheel is standard. It runs all day on one tank of fuel and has other features, too.

The Mono-Rotor Blue Brute can now be ordered in the 85', 125' and 250' sizes. See it . . . rent it . . . or buy it at your Worthington dealer listed in the Yellow Pages under "Compressors". Or write Worthington Corporation, Dept. 60-38, Holyoke, Mass. In Canada, Worthington (Canada) Ltd., Brantford, Ontario.

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"EUC" C-6

lowest cost tractor in the 200 h.p. class...

SERVICE ACCESSIBILITY

. . . years ahead engineering gives fast, easy access to major components to cut repair and replacement labor time. Compared with a competitive crawler of the same class, the C-6 saves 7 hours on a radiator replacement, 5 hours on a drive sprocket, 6 hours for an engine change, 17 hours on recoil system replacement. Every hour cut from downtime means more productivity and lower operating cost.

PROVEN POWER TRAIN

. . . every component, the GM 6-71 engine, Allison Torqmatic Drive and Euclid planetary final drive, are job proved for long service life and efficient performance. Parts and service are readily available everywhere.

LOWER ENGINE PARTS COSTS

. . . individual engine parts . . . pistons and rings, liners, connecting rods, etc. . . . are lower in cost . . . up to 72% less. And a complete engine replacement from fan to flywheel costs only half as much in the C-6!

If you're interested in cutting costs and getting more crawler production, check the Euclid C-6 . . . the lowest cost tractor and most versatile, by far! Your dealer has facts and figures and can probably show you a "Euc" crawler at work on a nearby job.

GM GENERAL MOTORS EUCLID

EUCLID

DIVISION OF GENERAL MOTORS, HUDSON, OHIO

Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

Modified Rigs Work in Mud, Speed Tough Foundation Job

WHEEL TRACTOR ON TRACKS—Tracks that run around bogey wheels and rear wheels of a Case tractor improve traction. Tractor is fitted with loader and backhoe.

ARMY RIG SUPPLIES MUSCLE—Winch on Army weapons carrier fitted with fixed boom turns a big pipe wrench that tightens nut on 125-ft-long tie rod that braces bulkhead.

MUD AND SHIFTING EARTH plagued the contractor during foundation work on a grain elevator project at Pascagoula, Miss. Special techniques and some unusual equipment were necessary to complete the job.

One of the rigs was an Army weapons carrier equipped with a short boom and a winch. It handled materials on the muddy job site and helped install 128 tie rods for a sheet pile bulkhead.

Another rig was a wheel-mounted utility tractor equipped with a loader bucket and a backhoe. To keep the tractor from bogging down in the mud, the contractor added a pair of bogey wheels and tracks that run around the bogeys and the tractor's rear wheels.

Working as a backhoe, this rig removed dirt from the foundation area where timber piles had been installed. The dirt had been placed there to prevent heavy equipment from damaging the pile tops. Heavy rigs had to travel over the area after the piles were driven because the earth had shifted and additional pile driving was necessary to correct the situation. Here's what happened:

The contractor, Blount Bros. Construction Co. of Montgomery, Ala., drove 5,854 timber piles for the slab foundation of the grain elevator, located at the water's edge. After the piles were cut off to proper elevation, a subcontractor dredged the mooring area. Then the entire foundation area, including the piles, shifted toward the water. More piles had to be driven to prevent further shifting.

Because heavy equipment was needed for the additional pile driving, Blount protected the timber pile tops by spreading an earth blanket to serve as a cushion for the crawler tracks. Then a Marion crane with an 80-ft boom and 90-ft leads drove 643 H-piles. These are 10 and 12-in. units ranging in length from 60 to 70 ft. Later, the earth blanket was excavated by the backhoe on the track-equipped Case tractor.

Earlier, the Marion crane had installed timber batter piles. It worked with a Vulcan 50C and a McKiernan-Terry 9B3 steam hammer. An old steam-driven skid rig with 90-ft leads drove vertical timber piles. This rig worked with a 50C and an 0 Vulcan steam hammer. Timber piles are 14 in. in dia with 7-in. tips. The piles range in length from 50 to 75 ft and total more than 85 mi.

Along one side of the elevator structure a steel sheet pile bulkhead protects the foundations and provides a mooring facility for barges. The bulkhead is 950 ft long and consists of U.S. Steel Corp. MZ-32 sheet piles ranging in length from 66½ ft to 70 ft. These were driven by a Delmag D12 diesel hammer on a Lorain L-72 crane equipped with a 100-ft boom.

To prevent the bulkhead from shifting, it was tied to a continuous 758-ft-long concrete anchor wall with 128 steel tie rods. The anchor wall is 3½ ft high and 7 ft wide. Each tie rod is 125 ft long and consists of three sections connected with

continued on next page

BULKHEAD PROTECTS FOUNDATION—Double channel wales at bulkhead hold steel rods that are tied to the anchor wall.

MODIFIED RIGS . . . *continued*

turnbuckles. Rod diameter is 2¾ in., upset at the threads to 3½.

At the bulkhead, continuous double-channel wales hold the tie rods. At their other end, the rods pass through the anchor wall.

A large force was necessary to tighten the nuts that hold the rods to the anchor. To avoid using hydraulic or mechanical jacks, Blount used a large pipe wrench for this operation. And to budge the nut, the Army weapons carrier with its winch supplied the needed force.

The M4 weapons carrier was spotted near the end of a tie rod and at right angles to it. The winch line was attached to the end of the pipe wrench, and it turned the nut as the cable was taken up. When the wrench moved as far as possible, the cable was released and workmen readjusted the wrench so the procedure could be repeated until the nut was snug.

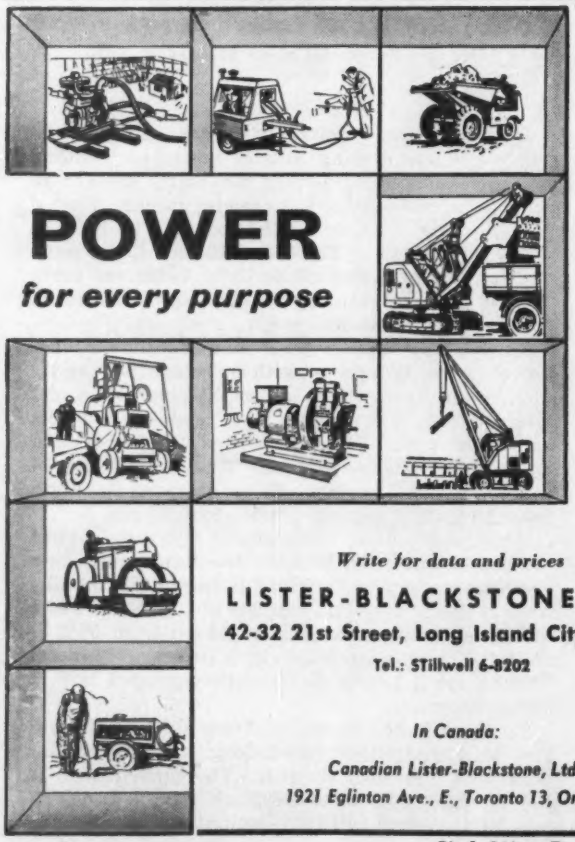
After completing the bulkhead, Blount poured concrete for the slab foundation of the grain elevator complex. This includes a head house measuring 56x82½ ft at one end of a storage silo area covering 82½x322 ft. The foundation slab for the storage area required 3,400 yd of concrete. It was placed in one continuous 56-hour pour using a single Manitowoc 3900 crane with a 2-yd bucket.

The 233-ft-high head house was concreted in wood slipforms that were constructed on the foundation slab. The forms for the entire 56x82½-ft structure acted as a unit. Pneumatic jacks spaced 6 ft apart lifted the forms as concrete was poured into them. The jacks were operated from a central control board and could be adjusted individually to level the form if necessary.

The slipforms accommodated both exterior walls and interior partitions. Vertical and horizontal bulkheads were inserted where necessary to box-out doors and other openings in the walls.

Subcontractor on the slipform operation was Marbury-Patillo Construction Co. of Birmingham, Ala. Their superintendent was Herman McCary.

In charge of the project for Blount Bros. Construction Co. is Gordon C. Bullock, project manager. Assistant superintendent is B. Ray Ford. General superintendent is C. A. Didden.



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DIESEL ENGINES
Air-Cooled 3½—72 HP

Eliminate Winter Worries!

- Built-in cold starting for sub-zero temperatures; totally enclosed working parts. No "freeze-ups".
- Engineered to suit all types of applications
- Economical operation with low fuel consumption
- Dependable power for generating sets, pumps, compressors, etc., in construction, oil fields, agriculture, mining, refrigeration, etc.

Model HB6 Air-Cooled 72 HP @ 2000 RPM

Write for data and prices

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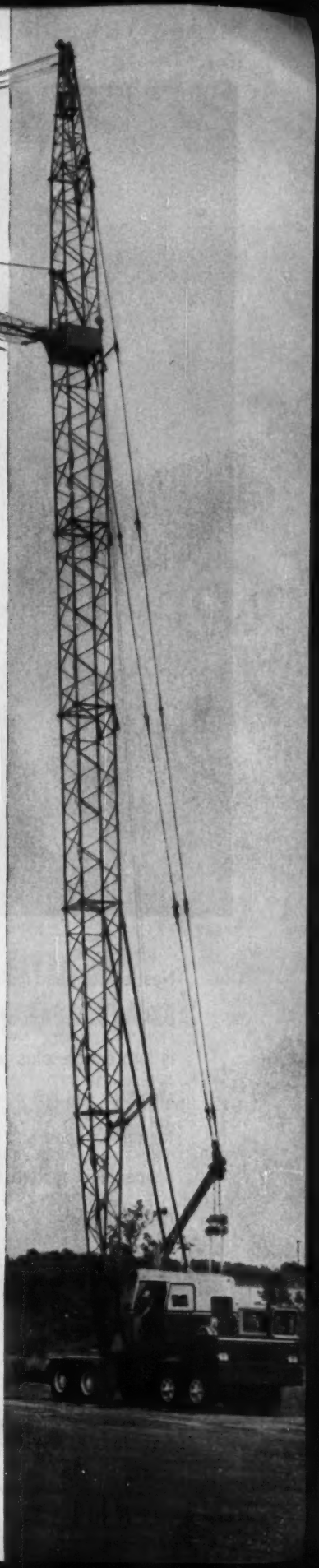
Another MARION First!

NEW AND EXCLUSIVE MARION MOBILTOWER CRANE



Multiplies the job-usefulness of a Marion truck or crawler crane; Gives You TWO basic machines in one.

FAST CONVERTIBILITY from drag, clam or pile driving to tower crane service. Same main boom and jib components used for conventional and tower crane service.

REAL TOWER CRANE PERFORMANCE — Handles 5,000-lb. loads at radius of 60 feet and heights of 107 to 150 feet (depending on jib boom angle). Progressively bigger loads at radii down to 20 feet.

MAIN BOOM ADDS EXTRA REACH — Main boom angle can be lowered from near-vertical to any lower angle within rated capacities of machine and boom. Main boom and jib angle instantly controllable.

FREEDOM TO MOVE on truck mount or crawlers. No rails, no in-line limitation to work area.

FAST, FAST, FAST — Sets up or converts quickly on the job. Machine lifts boom and jib from horizontal without any anchor rigging. All conversion components pin-connected. Boom lowers or raises in four minutes — no need to take chances with storms. No electric power problems.

SMOOTH, SMOOTH POWER — Power load lowering on BOTH hoist line and jib control line.

STRENGTH — Tubular T-1 steel boom with tubular lacing includes base and point sections that lift full rated capacity of machine.

WHEEL-MOUNTED OUTRIGGERS for fast in-line machine move-ups. Raising only front wheels of outrigger beams (manual or hydraulic) permits steering.

FOR MORE INFORMATION, phone DUpont 2-1151, Marion, Ohio, see your Marion Distributor or wire or write

MARION POWER SHOVEL COMPANY • Marion, Ohio
A Division of Universal Marion Corporation

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Nestle your head inside the balance-perfect, adjustable headband of a GenTex Safety Hat. The lightweight, rugged GenTex is protection-plus against impact, penetration, dielectric shock. It will not peel, crack or chip. Choose from 9 colors for appearance and instant job classification. The 6 point suspension system headband (same principle in Jet Pilot helmets) snaps in, has fingertip control and is fully washable. Brim and peaked cap models. For full particulars write to the GenTex Corporation, 450 7th Avenue, New York 1.

GENTEX® SAFETY HATS
another quality product
by the GenTex Corporation

61-8

Circle 166 on Reader Service Card

Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distribution, sales personnel and other activities.

Distributor Appointments

Koehring Co.: Action Equipment Co., West Sacramento Calif., has been named Sacramento Valley distributor for Koehring, Parsons, and Ko-Cal equipment. The Kwik Mix Co. has appointed John D. Alm, Bemus Point, N.Y., distributor for Chautaga and Cattaraugus Counties, N.Y. and Erie County, Pa.

Bucyrus-Erie Co.: Tri-State Tractor Co. has been appointed distributor for the hydrocrane and crane-excavator lines in all but three Georgia counties. In central Florida, the line will be handled by Linder Industrial Machinery Co., Lakeland.

Unit Crane & Shovel Corp.: Bay City Shovels, Inc. has named Harron, Rickard & McCone Co., Norwalk, Calif., distributor for nine southern California counties. Chesapeake Supply and Equipment Co. Baltimore, has been named distributor in Maryland, Delaware, the District of Columbia, four West Virginia counties and eight Virginia counties.

Cleaver-Brooks Co.: The heater division has named Air Mac, Inc., Portland, Ore. and Air Mac, Inc., Seattle Wash., distributors in their states.

Bath Iron Works Corp.: The Pennsylvania Crusher Div. line will be handled by the Chavigny Co., Houston Tex., for all but the southwest section of the state.

Harnischfeger Corp.: Constructors Equipment Co., Denver, Colo., has been named state distributor for the P&H line.

Allis-Chalmers Mfg. Co.: Berry Equipment Co., Fort Worth, has been named distributor for 12 Texas counties.

continued on page 169

Available now... Monmouth engine bearings for all heavy-duty equipment

Now you can get quality Monmouth Engine Bearings for all your construction equipment, including graders, bulldozers and Caterpillar units.

Your nearby NAPA jobber offers fast service on the complete line of Monmouth connecting rod and main bearings for on-the-job repairs. Both steel backed and solid aluminum bearings are in stock, as well as the famous Clevite 77 Bearings which is original equipment in most heavy-duty engines.

Ask your NAPA jobber for the new, fully illustrated catalog of aluminum bearings for Caterpillar construction equipment. He can give you service on the complete line and help you do a better job—faster.

NAPA National Automotive Parts Association Assurance of Quality

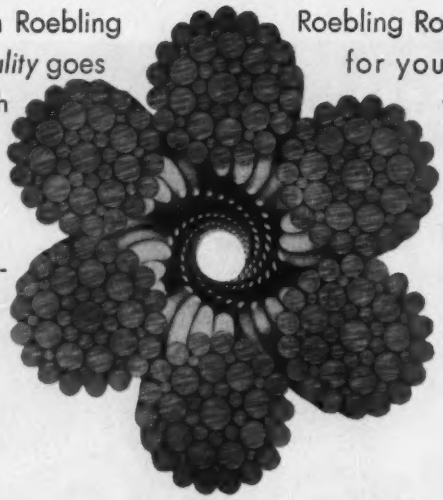
MONMOUTH *Engine Bearings*

CLEVITE SERVICE: Cleveland Graphite Bronze • *Division of Clevite Corporation* • Cleveland 3, Ohio

Circle 167 on Reader Service Card ▲

Circle 168 on Reader Service Card ➤

Profit from the inside story on Roebling Royal Blue Wire Rope—the *quality* goes all the way through. Extra high strength in conjunction with uniformity of rope construction means unequalled resistance to wear and tear — and a whopping increase in service life. That is why every inch of Roebling Royal Blue pays off on the job for you. Get all the details from your wire rope distributor, or write for free booklet to Roebling's Wire Rope Division, Trenton 2, New Jersey.



ROEBLING

Branch Offices in Principal Cities
John A. Roebling's Sons Division
The Colorado Fuel and Iron Corporation.

Quality inside and outside

We put a lot of work into it — You get a lot of work out of it

How to Save At Least One Cent Per Cubic Yard On Your Excavation Costs

Excavation is generally the biggest single pay item of a highway or street job, and it gets—and deserves!—a lot of your attention.

If a method, or machine, is found that will cut excavation costs by even one cent per cubic yard, you will usually buy it—it means important savings to you!

But there is another part of your work which gets little attention (it isn't spectacular, and it isn't a separate pay item) where even bigger savings are not only possible, but easily attainable—and that is in finish grading.

Look at it this way—on the average highway job **there is a square yard of finish grading for every cubic yard of excavation.**

Check your last few jobs and see for yourself! **So it follows that a penny per square yard saved on finish grading is exactly the same as a penny per cubic yard saved on excavation.**

The Preco Automatic Blade Control, installed on one or more of your graders, can save you 1¢—2¢—or even 3¢ per square yard on grading costs—you can prove this, on your own job. It is an irrefutable fact.

Call your Preco dealer, or Caterpillar Tractor Co. and LeTourneau - Westinghouse Co. dealers and a representative will visit your job and show you how. Call today—because every day *without* this method is costing you money.

(Advertisement)

Circle 252 on Reader Service Card

SALES AND SERVICE . . .

continued

On the Sales Front

Oliver Corp.: Henry A. Parker has been appointed manager of the Oakland, Calif., sales and service branch.

U.S. Steel Corp.: The Universal Atlas Cement Div. has named Hardy Magrath manager of the new sales office at Port Everglades, Fla.

Hydro-Line Mfg. Co.: The J. N. Fauver Co., Inc., distributor in the newly expanded Chicago district, has named Frederick R. Hodgkinson sales manager.

Highway Equipment Co.: Paul H. Maple has been appointed division manager for nine Southern states.

Flygt Corp.: Edward J. Duncan has been named eastern sales manager for the submersible pump line.

Flintkote Co.: Edward C. Koch has been named vice president, sales, for the Orangeburg Mfg. Co. division, New York, N.Y.

Chain Belt Co.: William T. Powell is new manager of the construction machinery section's western division, headquartered in Los Angeles.

Granco Steel Products Co.: Raymond J. Gindle has been named manager of the new district sales office at Tampa, Fla. Russell E. Woerheide heads the Chicago office, recently moved to Park Ridge, Ill.

Link-Belt Speeder Corp.: Lyle T. Hanse is the new assistant sales manager in Cedar Rapids, Iowa.

Gar Wood Industries, Inc.: William E. Van Horn has been appointed sales manager of the new Hydraulic Division.

Allis-Chalmers Mfg. Co.: L. S. Hollingsworth has been named sales manager of the renewal parts section.

Reynolds Metals Co.: David A. Kurr is new southeastern regional sales manager for architectural and building products, with headquarters at Camden, N.J.

continued on page 170

Suddenly you made a friend

because you *"found"* the MOST UNUSUAL Christmas gift-giving idea for *customers, employees and friends* EVER SEEN!

★ ★ ★ ★

Yes, you were *"really in action."* Your customers even called to say "THANK YOU" for your *unique and wonderful remembrance* and thereby opened the door to ADDITIONAL SALES! Your employees and friends too, *showed their appreciation* in the many small ways ONLY YOU would understand.

★ ★ ★ ★

If you buy gifts *(between $7.50 and $100.00 each)*, you'll surely want to see this *unusually practical, sensationally simple* and *refreshingly different* way of saying "THANK YOU" to the people who are IMPORTANT TO YOU AND YOUR COMPANY.

WRITE FOR MORE INFORMATION

MAIL THIS COUPON TODAY

Automated Gift Plan, Inc.,
80 Park Avenue, New York 16, N. Y.
CBS-544

Please send further information.

Company _____

Address _____

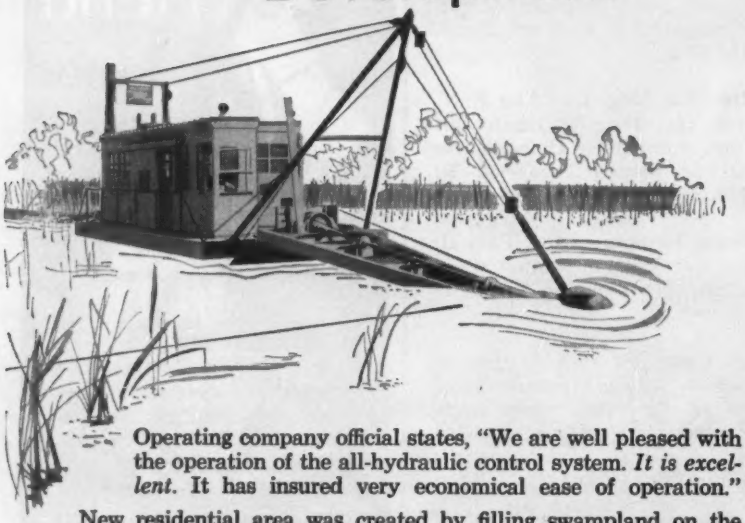
City _____ Zone ___ State _____

Att _____ Title _____

We use approx. _____ Gifts in the $7.50 to $100.00 price range

Circle 169 on Reader Service Card

Ellicott Dredge RECLAIMS SWAMPLAND For Residential Development



Operating company official states, "We are well pleased with the operation of the all-hydraulic control system. *It is excellent.* It has insured very economical ease of operation."

New residential area was created by filling swampland on the South Carolina coast adjacent to the Inter-coastal Waterway. The contractor, the Chatham Dredging Company, chose to handle the job with a 10" DRAGON® model portable, hydraulic dredge designed and manufactured by Ellicott. Influencing the contractor's choice were field-tested, advanced design features such as complete electro-hydraulic operation with centralized controls, a two-piece rectangular hull which can be assembled either ashore or in the water, and precision machinery easily accessible for servicing... eliminating costly delays for maintenance of vital operating parts.

Electro-hydraulic control of all moving parts gives greater handling ease and significantly reduces operator fatigue. Man size working and walk-around space between hull and machinery permits ventilation and easy safe inspection. The 40'x16'x4' "Chatham" digs to a maximum 20 ft. depth. It can pump fill materials through pipelines up to 2500 ft. long and has a total rated output of 325 cubic yards per hour. A 319HP diesel engine provides power.

Write for Bulletin 980 for complete design details and application potential of the DRAGONS. A DRAGON may be just what you need.

E L L I C O T T D R E D G E S

ELLICOTT MACHINE CORPORATION, Baltimore 30, Maryland, U.S.A.; Ellicott-Brandt, Inc., Baltimore, Maryland; Ellicott Fabricators, Inc., Baltimore, Maryland; McConway & Torley Corp., Pittsburgh, Pennsylvania; Timberland-Ellicott, Limited, Woodstock, Ontario, Canada; Dragues Ellicott France, Paris, France; Dragas Ellicott do Brasil Ltda., Rio de Janeiro, Brazil; Ellicott de Mexico, Mexico City, Mexico.

Successors to the floating dredge business of the Bucyrus-Erie Company and the American Steel Dredge Co. Complete engineering, design and construction service.

ELLICOTT MACHINE CORPORATION
1605 Bush Street • Baltimore 30, Maryland

Send me a copy of Bulletin 980, describing the complete line of DRAGON model dredges.

Name_____

Firm_____

Address_____

City_____ Zone_____ State_____

4441

Circle 170 on Reader Service Card

SALES AND SERVICE...

continued

Willys Motors, Inc.: Frank M. Lukacs is assistant general sales manager for Jeep vehicles, parts and accessories.

Inland Steel Co.: Dale M. Curtin is new sales representative for Colorado, Wyoming, Utah, New Mexico, El Paso, and the Texas Panhandle with headquarters in Denver.

Dresser Industries, Inc.: Clark Bros. Co. has named these sales engineers for engines, compressors, and gas turbines: M.S. Kenady, Amarillo, Tex.; Z.B. Deer, Tulsa, Okla.; Edward S. Leonard, Houston, Tex. Thomas R. Bett, Shreveport, La.

Alcoa Aluminum Co.: William B. Renner has been appointed assistant sales manager for the New York district.

LeTourneau - Westinghouse Co.: Harold B. Ewoldt has been named Truck Specialist, Sales.

Humble Oil & Refining Co.: Charles F. Boudreau has been named manager of asphalt sales for Esso Standard Region.

Soule' Steel Co.: James Kendall is new sales manager of the steel structures division.

Special Mention

Dixie Form & Steel Co.: H. P. Cerutti has been appointed executive vice president and general manager.

Hobart Bros.: Four workshop courses in fusion welding will be held in Troy, Ohio. Each course will last five days and cost $50. Starting dates: Arc Welding and Quality Control, Oct. 9; Welding Fundamentals for Supervisors and Engineers, Nov. 13; Automatic Welding for Management, Nov. 27; Gas Shielded Arc Welding Processes, Dec. 4.

Rodeffer Industries, Inc.: Wesco Materials Corp., Dallas, Tex., has begun manufacture and distribution of Colorfull, an admixture for coloring ready mixed concrete.

Hy-Mac Corp.: The St Louis firm has purchased Hydraulic Machinery Corp., Waukesha, Wis.

619

When the work won't wait...rent Galion rollers

You free valuable working capital for more urgent needs. You eliminate profit loss from idle equipment. You reduce costly downtime. You avoid schedule tie-ups and peak season equipment shortages. You're always ready for special jobs with latest model Galion rollers that get work done faster, more efficiently.

Whatever your Roller requirements . . . you can count on valuable help from your Galion distributor. He rents all sizes, all models of Galion Roll-O-Matics. Tandems, three-wheelers, pneumatic tire rollers; models from 3 to 20 tons. See him for full particulars on the cost-saving Galion Roller Rental Plan.

GALION® ROLLERS AND GRADERS

Send for descriptive booklet DM-37 on the GALION ROLLER RENTAL PLAN No cost or obligation

THE GALION IRON WORKS & MFG. COMPANY, Galion, Ohio, U.S.A.

General and Export Offices, Galion, O., U.S.A., Cable Address, GALIONIRON, Galion, O.

Circle 171 on Reader Service Card

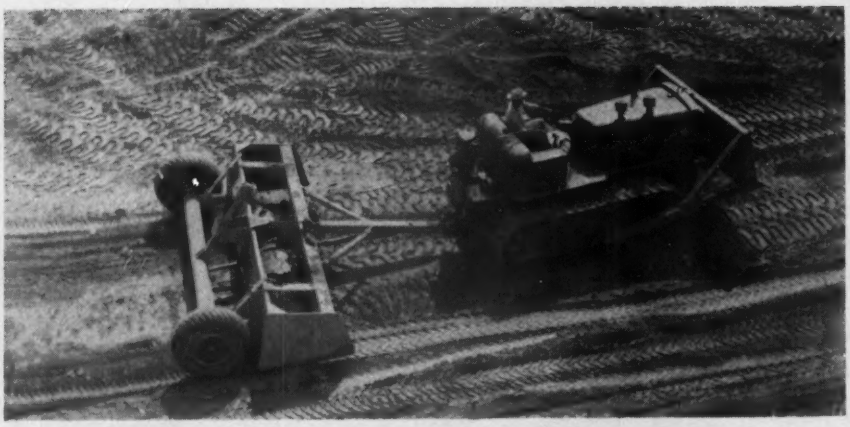
Construction Equipment News

For more information on any item, circle the key number, found at the end of each item, on the READER SERVICE CARD just inside the back cover.

New Drag Scraper Maintains Haul Roads

A drag scraper that attaches to any tractor will cut as deep as 1 ft to level cuts, smooth fills, and maintain haul roads. Model IDS-18 has three curved blades for a cutting width of 18 ft. Cable or hydraulic controls are available. The 7,150-lb, 8.9-cu-yd-capacity machine rides on two 17:00x20 tires.—Be-Ge Mfg. Co., P.O. Box 67, Gilroy, Calif.

Circle 301 on Reader Service Card



Hydraulic Road Breaker Delivers 500,000-lb Blows

The head on the Woodpecker's long neck delivers controlled blows of up to 500,000 lb to score and break pavement at 1,000 to 2,000 ft per hr. The Woodpecker travels to the job at 55 mph and creeps at 14 fpm.—RPB Corp., 2751 East 11th St., Los Angeles 23, Calif.

Circle 302 on Reader Service Card

Forced Feed Conveyor For Rapid Loading

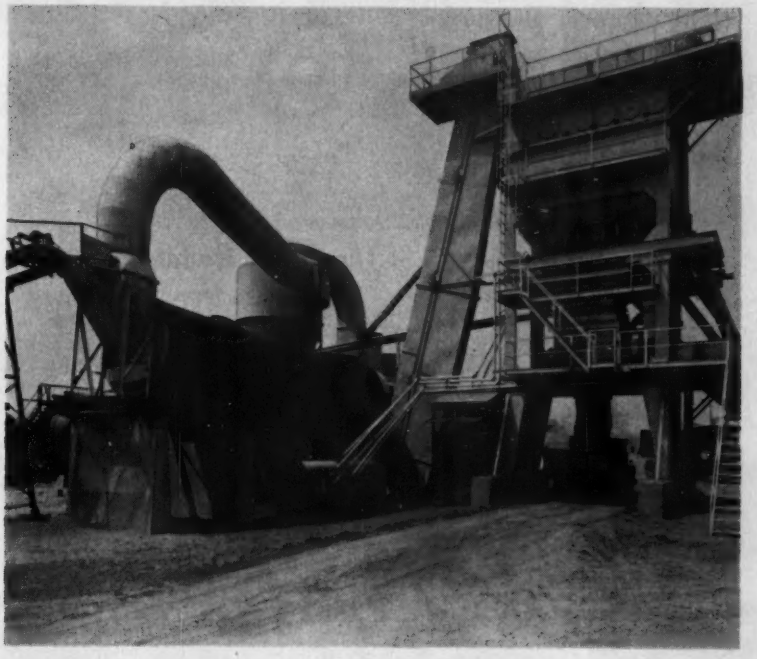
A new forced feed conveyor loader has a 30-in.-wide belt that attains a speed of 500 ft per min. It is for use with Massey-Ferguson industrial equipment.—Harrington Mfg. Co., Lewiston, N.C.

Circle 303 on Reader Service Card

Twisting Belt Keeps Conveyor Clean

Two twist pulleys at the ends of the belt flight flip this conveyor belt on its return trip to prevent the sticky side from touching idlers and pulleys. Residue on belt cannot clog moving parts.—B. F. Goodrich, Akron, Ohio.

Circle 304 on Reader Service Card



Automatic Asphalt Plant Produces 300 Tons An Hr

A new asphalt plant with 10,000-lb batch capacity has automatic controls for cold aggregate feed, dryer burner firing, and tower batching. Model 581 is rated at 300 tons per hr at a 60-sec charge-mix-discharge cycle. Four or five compartment storage bins hold up to 100 tons of hot aggregates. Pressure injection puts asphalt deep into the mix in 5 to 7 sec.—Baldwin-Lima-Hamilton Corp., Construction Equipment Div., Lima, Ohio.

Circle 305 on Reader Service Card

Power Added To Scrapers

The Jobmaster attachment for Cat 630, 631, DW20, and DW21 scrapers is mounted directly on the scraper chassis to provide twin-engine power for difficult jobs. The unit can be removed or remounted by three men in 45 min.—Shepherd Machinery Co., Los Angeles.

Circle 306 on Reader Service Card

Fork Lift Handles 40,000-lb

Loads up to 40,000 lb can be picked up by this diesel-electric fork lift. A 210-hp diesel engine drives ac and dc generators. The unit's two front wheels are powered by dc electric motors mounted inside the rim. Individual electric gearmotors placed at the point of work power the hoist, rack tilt, and rear wheel steering.—R. G. LeTourneau, Inc., 2399 S. MacArthur, Longview, Tex.

Circle 307 on Reader Service Card

Attachment Chews Stumps

A pto stump cutter that mounts on a three-point hitch tractor in the 42-drawbar-hp class chews stumps 12 in. below ground level. The hydraulically operated unit converts pto shaft speed of 540 or 810 rpm to 1,000 or 1,500 rpm at the 29¼-in. cutting wheel. The wheel has 58 replaceable carbide-tipped teeth.—Wagner Iron Works, Milwaukee 1, Wis.

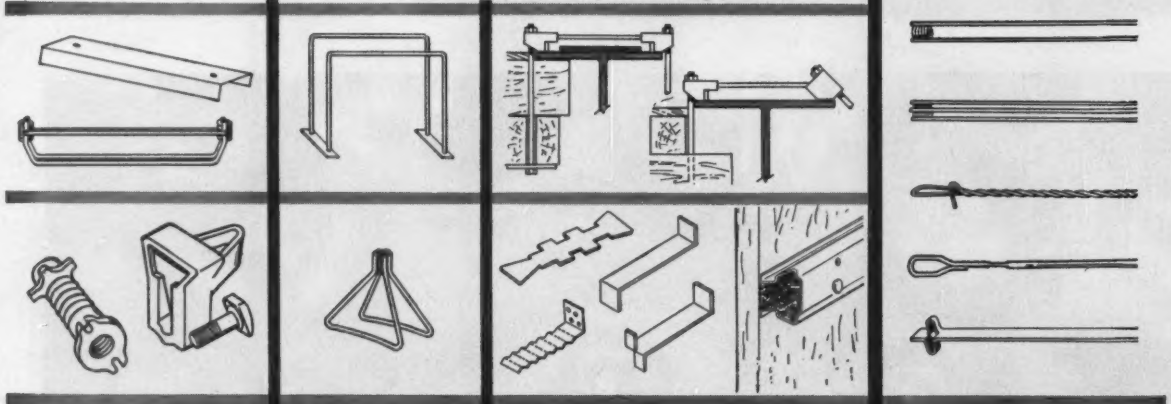
Circle 308 on Reader Service Card

PUT SAFETY, SPEED, ECONOMY INTO CONCRETE FORMING

.....use SURE-GRIP ACCESSORIES

From one source . . . every accessory you need for accurate, safe and dependable concrete forming. They're made to save time . . . reduce your forming costs.

Your requirements will be filled expediently by a Dayton Sure-Grip distributor near you. As one of hundreds of Sure-Grip distributors, he's experienced, reliable—always ready to help you solve your forming problems.



DAYTON SURE-GRIP HAS A COMPLETE LINE OF ACCESSORIES FOR EVERY CONCRETE FORMING REQUIREMENT

Our detailing department will gladly help plan your forming requirements and layouts.

Years of experience is your assurance of competent, cost saving recommendation.

Write for your free copy of our new catalog

THE DAYTON SURE-GRIP & SHORE COMPANY

113 KERCHER ST., MIAMISBURG, OHIO

Circle 174 on Reader Service Card

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

Signal Box Controls Boom

A hand-held signal box permits the operator of a new hydraulic truck-mounted boom to stay with the load for accurate alignment and placement. The Iowa 3000 fits on any single axle truck and will handle 3,000-lb loads at the end of its 18-ft boom. A travelling trolley allows the load to be positioned from a short cable.—Bopp Mfg. Co., P.O. Box 125, Waterloo, Iowa.

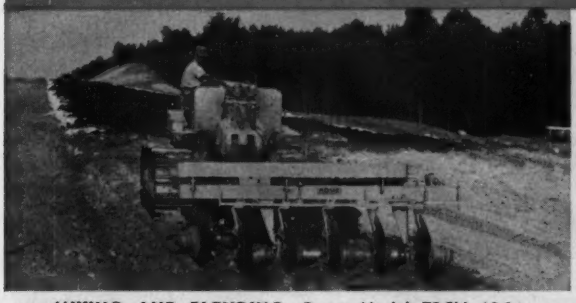
Circle 309 on Reader Service Card

Hod Buggy Fits on Fork Lift

A new 7-cu-ft mortar handling buggy is designed to fit on a fork lift, two at a time, and take up less room on scaffolds. The buggy is only 52½ in. wide. Depth is 29½ in. and length is 59½ in. The 175-lb buggy also features high under-clearance for easy pick-up on pallet forks from either side.—Lull Engineering Co., 3045 Highway 13, St. Paul, Minn.

Circle 310 on Reader Service Card

BUILD HIGHWAYS THE ROME WAY



MIXING AND BLENDING. Rome Model TRCH 10-36 Hinge Type Offset Disk Plowing Harrow cuts up to 13" deep for low cost mixing, blending, bonding lifts.

AERATING. Rome Model TRH 20-30 Hinge Type Offset weighs over 9,000 lbs.—heavy duty construction for less maintenance, longer life.

PULVERIZING AND LEVELING. Rome Model TCW 40-24 Wheel Type Offset cuts 15' wide—has rubber tire transport for easy turns, transport, accurate depth control.

TOUGH, VERSATILE AND MONEY SAVING. Rome Disk Plowing Harrows are available in many sizes and types. For aerating, mixing, scarifying, pulverizing—there's a ROME for your job, your equipment. See your Rome-Caterpillar dealer.

ROME.®

ROME PLOW COMPANY
Cedartown, Georgia

Circle 175 on Reader Service Card

Report from Booming New York State...

NASSAU COUNTY GOES GAR WOOD EXCLUSIVELY FOR 26 YEARS

The Nassau, Long Island, Department of Public Works owns 65 Gar Wood truck bodies and hoists, and since 1935 has used Gar Wood truck equipment exclusively.

The reason is expressed by Herbert Abrams, General Foreman of the Road Maintenance Division. Says Abrams: "I've learned from experience that Gar Wood truck equipment is built to last; to perform at its best without expensive maintenance. I'll take a Gar Wood hoist and body anytime."

Abrams' equipment gets a year-'round workout spreading stone, sand and salt, laying cinders, and performing general hauling tasks.

Buckeye 407 Digs Service Lines in Long Island

Lynbrook, Long Island, contractor S. T. Grand, Inc. owns five GarWood-Buckeye ditchers, three of which are Buckeye 407's.

States Foreman Joe Poole: "The Buckeye 407 digs more than 1000 feet a day for us through all kinds of terrain. It works hard and fast, and requires little maintenance. For working in and out of tight places, and over an irregular digging line, you can't beat a 407."

Control of the 407 is so easy and accurate that Grand's operator runs the machine virtually with his fingertips, standing at its side (see photo).

New York Contractor Earns 45% More with Gar Wood Hopper Trailer

Taking advantage of Gar Wood's Free Payload Analysis program, a New York contractor recently compared the performance of his tandem rear dump trucks with the Gar Wood "Easterner" hopper trailer. The test involved hauling gravel for road construction, and was conducted under severe weather conditions.

The results (see chart) speak for themselves. This contractor found the "Easterner" would earn enough extra revenue to practically pay for itself in a single year! He now owns five Gar Wood hoppers.

Gar Wood's hopper line includes models to give the greatest legal payloads in any given state, eliminate profit-slashing overload fines, and operate at top capacity under all regional conditions.

Gar Wood will make a Free Payload Analysis of your operation, just like the one illustrated, to show you how hopper trailers can produce extra revenue. See your local Gar Wood distributor, or phone Trailer Sales Department.

GAR WOOD "EASTERNER" hopper trailer gives you powerful tandem-drive traction plus far greater legal payloads. This unique combination produces extra hauling revenue for both on- and off-highway work.

	HOPPER TRAILER	REAR DUMP TRUCK
Legal Yards Per Trip	15	10½
Miles Per Trip (One-way, Loaded)	7	7
Yard Miles Per Trip	105	73.5
Hauling Revenue Per Yard Mile	12.4¢	12.4¢
Revenue Per Trip — Per Unit	$13.20	$9.11
Trips Per Day	12	12
Revenue Per Day	$158.40	$109.32
EXTRA Revenue Per Day	$ 49.08	
Working Days Per Year	120	
EXTRA REVENUE PER YEAR PER UNIT	**$5889.60**	

GAR WOOD'S AT WORK!

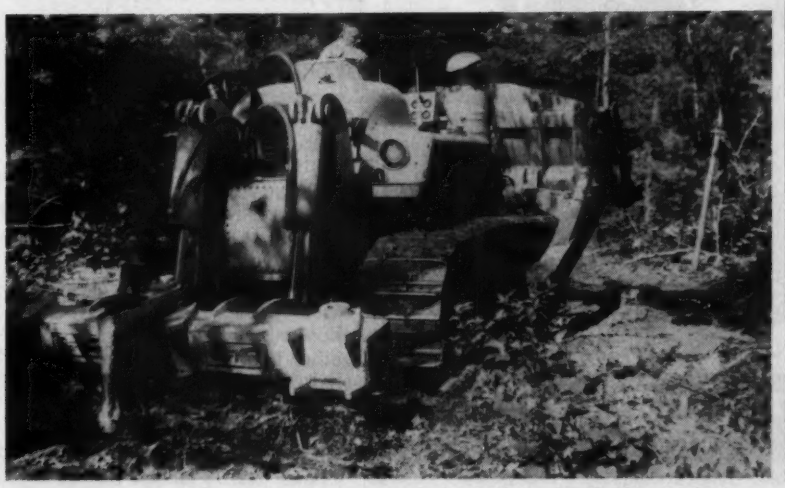
Dozer Blades, Pump, Ripper on Job at 100-Million-Dollar Missile Site

GAR WOOD VARIACS PUMP, controlling the Gar Wood dozer blade on this Euclid C-6, allows operator to meter tractor horsepower to requirements of both blade and crawlers, saving both horsepower and fuel, eliminating heat build-up.

CABLE TRENCH FOUR FEET DEEP CUT BY HYDRAULIC RIPPER

More than a million feet of ditch is being cut by this Gar Wood hydraulic ripper at Plattsburgh.

The ripper is drawbar-mounted to the Euclid C-6 tractor frame, eliminating any pull on the transmission case. The cast alloy steel tooth is triple-wedged for positive retention, yet is easily changed. The powerful hydraulic unit with its straight-down thrust rams locks to maintain unvarying ripping depth, and keeps the ripper cutting through the rockiest terrain.



At the new Plattsburgh Missile Site, Gar Wood equipment matched to four Euclid C-6 tractors is being used to lay a 205-mile inter-site communication cable. The job is being done by the Gustav Hirsch Organization, Inc. of Columbus, Ohio, a world-wide electrical contractor and consulting engineering firm.

The job is a tough one, running through terrain varying from the Adirondack Mountains to swampland. The contractor reports complete satisfaction with the performance of his Gar Wood equipment.

Included in this Gar Wood equipment are Tipdozer blades, cable control units, a hydraulic ripper, and the revolutionary Variacs variable volume piston pump. Variacs represents a new concept in hydraulics—a pump that delivers oil only on demand, only in the volume required—and its performance at Plattsburgh has been outstanding.

The Gar Wood ripper is used to dig the four-foot-deep trench into which the cable is laid. The other three units are used for clearing and filling.

The successful operation at Plattsburgh is but one example of why contractors in New York and across the country pick the Euclid-Gar Wood combination. For more than 35 years Gar Wood has been the leader in the design, development and manufacture of equipment matched to the world's most powerful tractors—equipment combining precision control with the ruggedness to meet the toughest operating conditions.

GAR WOOD INDUSTRIES, INC.

Wayne, Mich. • Findlay, Ohio

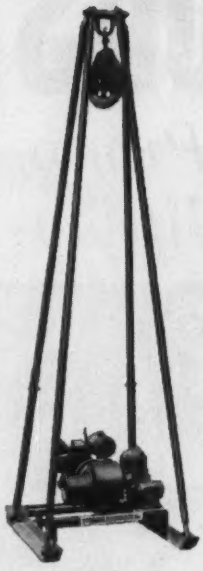
Circle 177 on Reader Service Card

YOUR FIRST NEED IN SOIL SAMPLING

AN

S&H PIPE DRIVING WINCH

INEXPENSIVE • LIGHTWEIGHT • ECONOMICAL



A Sprague & Henwood pipe driving winch is your first requisite for normal soil sampling operations. For shallow holes there is the Model PD, and for the deeper holes, the more rugged Model PDH. Both models are furnished with a tubular steel derrick with telescoping rear legs permitting 10′ pulls. In addition to the skid mounting, there is also available a special trailer mounting that permits operation of the unit as either a skid or trailer-mounted unit. Write today for full particulars. Ask also for Bulletin #300 which illustrates and describes the complete S & H soil sampling line.

Look for our emblem... It's your Seal of Quality

SPRAGUE & HENWOOD, Inc. S&H

SCRANTON 2, PA.

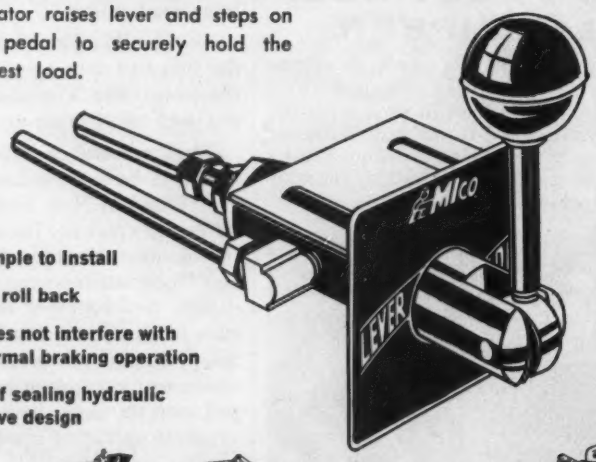
MEMBER OF DIAMOND CORE DRILL MANUFACTURERS ASSOC.

New York—Philadelphia—Nashville—Pittsburgh—Tucson—Salt Lake City—Buchans, Nfld.
Export Division: Sprague & Henwood International Corporation, 11 W. 42nd St., New York, N. Y.

Circle 178 on Reader Service Card

MICO HYDRAULIC PARKING LEVER LOCK

Operator raises lever and steps on foot pedal to securely hold the heaviest load.



- Simple to Install
- No roll back
- Does not interfere with normal braking operation
- Self sealing hydraulic valve design

Post Hole Diggers | Cement Mixers | Ditch Diggers | Dump Trucks | Tow Trucks

MINNESOTA AUTOMOTIVE, INC.

1101 North Front Street — Mankato, Minnesota

Circle 253 on Reader Service Card

EQUIPMENT NEWS . . .

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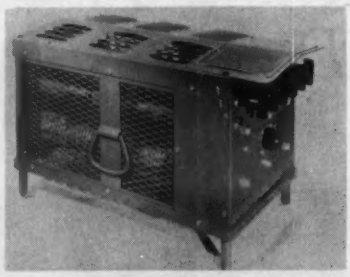

Welding Resistor Stations For Multi-Arc Systems

A new series of resistor stations for multi-arc welding systems are built in compact, square housings that facilitate stacking. The stations permit individual welder control of current from a multi-arc source in 5 or 10-amp steps. Primarily for dc metallic arc welding, the units can also be used for shielded arc, consumable electrode, and other processes. Weights are from 53 to 64 lb, depending on rating which ranges from 235 to 400 amp.—J. B. Nottingham & Co., Inc., 441 Lexington Ave., New York 17, N.Y.

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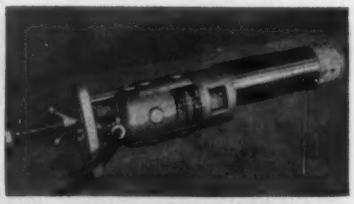

Heavy Concrete Drill Supports Self on Wall

A concrete drill that bores holes up to 14-in.-dia through walls 11 ft thick needs no external support or bracing. To operate, a ¾-in.-dia, 1-in.-deep hole first is drilled by an ordinary tool. The Pilot-Pull is then anchored to the concrete by a pilot which extends through the diamond bit and expands in the ¾-in. hole. The drill pulls itself forward into the concrete by a controlled hydraulic force exerted against the anchored pilot. Hydraulic pressure comes from an electric motor that rotates the bit. The drill weighs 65 lb. — Lawrence Machine & Mfg. Co., 7911-10th St., Seattle, Wash.

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EQUIPMENT NEWS . . .

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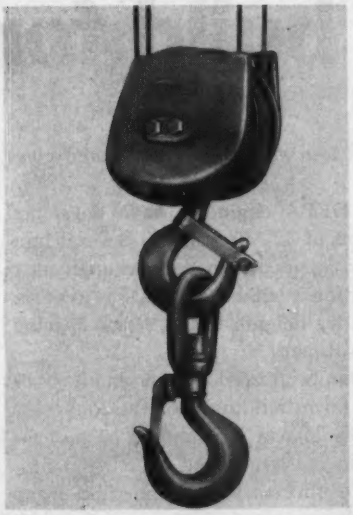

Safety Hook Attaches To Any Lifting Unit

A safety hook that can be attached to any lifting machinery has a catch that locks at two points to prevent the load from jumping off the hook. Available in capacities up to 25 tons. — Shepard Niles Crane and Hoist Corp., Montour Falls, N.Y.

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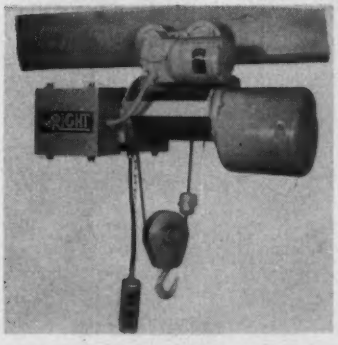


Electric Overhead Hoist Can Lift Big Loads

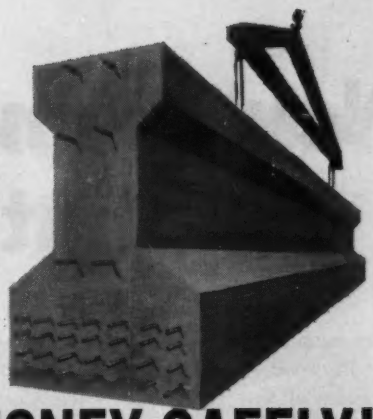
A new electric overhead hoist is available in capacities from one to three tons. The W-1 features two-speed or variable speed controls; lug or base mounting; plain, geared, or motorized trolleys; and two or four-part reeving. It can be equipped with overload cut-off for safety.—Wright Hoist Div., American Chain & Cable Co., 735 Hay St., York, Pa.

Circle 314 *on Reader Service Card*

Dependable

Richmond

products for prestressed concrete



SAVE TIME & MONEY SAFELY!

Richmond Strand Deflection and Push Down Inserts for depressing strands. Special units can also be manufactured to suit individual needs.
Richmond Chairs and Spacers for void supports and spirals in prestressed piles and beams.
Richmond Inserts for connection of cast-in-place diaphrams to prestressed girders.
Richmond Inserts for anchoring to or hanging from prestressed members.
Richmond Extended Coil Tyscrus for lifting prestressed beams and girders. (2 & 4 strut)
Richmond Inserts for anchoring guard rails to prestressed girders.
Phillips Self-drilling Concrete Anchors for anchoring to any concrete members after concrete has set.
Richmond Offset Free-Fit Hanger Frame-Tys used to hang forms from prestressed "I" beams.
SWENCH—manual impact wrenches for tightening and loosening concrete forms.

Shown here are a few of the many Richmond-engineered products for the prestressed concrete construction industry. For more information about them, or help with any specific concreting problem, write to:

Richmond SCREW ANCHOR CO., INC.
INSIST ON RICHMOND AND BE SURE IT'S RICHMOND
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VISIT US AT THE PRESTRESSED CONCRETE CONVENTION BOOTH 38, BROWN PALACE HOTEL, DENVER, OCT 15-19

Circle 179 *on Reader Service Card*

New from plywood research: that helps you build for

THE RIGID FRAME, newest building system from Douglas Fir Plywood Association research, is the simplest, most economical way to enclose space. Costs well below $1 per sq. ft. have been reported for the basic building shell. The system is fast, too. Each of the 52x100-ft. warehouses below took only 11 days to complete.

Basic unit is a load-bearing arch made of four lumber members, rigidly connected by nailed plywood gusset plates. The system owes its strength and economy to these plywood gussets. They do the job as well as, or better than, costly metal connectors, and insure an absolutely rigid connection. Series of the rigid frames—up to almost any number—are sheathed and tied together structurally by Exterior (waterproof) plywood walls and roof.

The rigid frame system requires little in time, materials and capital outlay. Frames are easy to assemble, off-site or on, and are quickly set in place. Construction grade West Coast lumber and DFPA quality plywood are used. The system is ideal for pre-cutting or pre-assembly. It takes fewer pieces and less work than trusses, and gives more usable space.

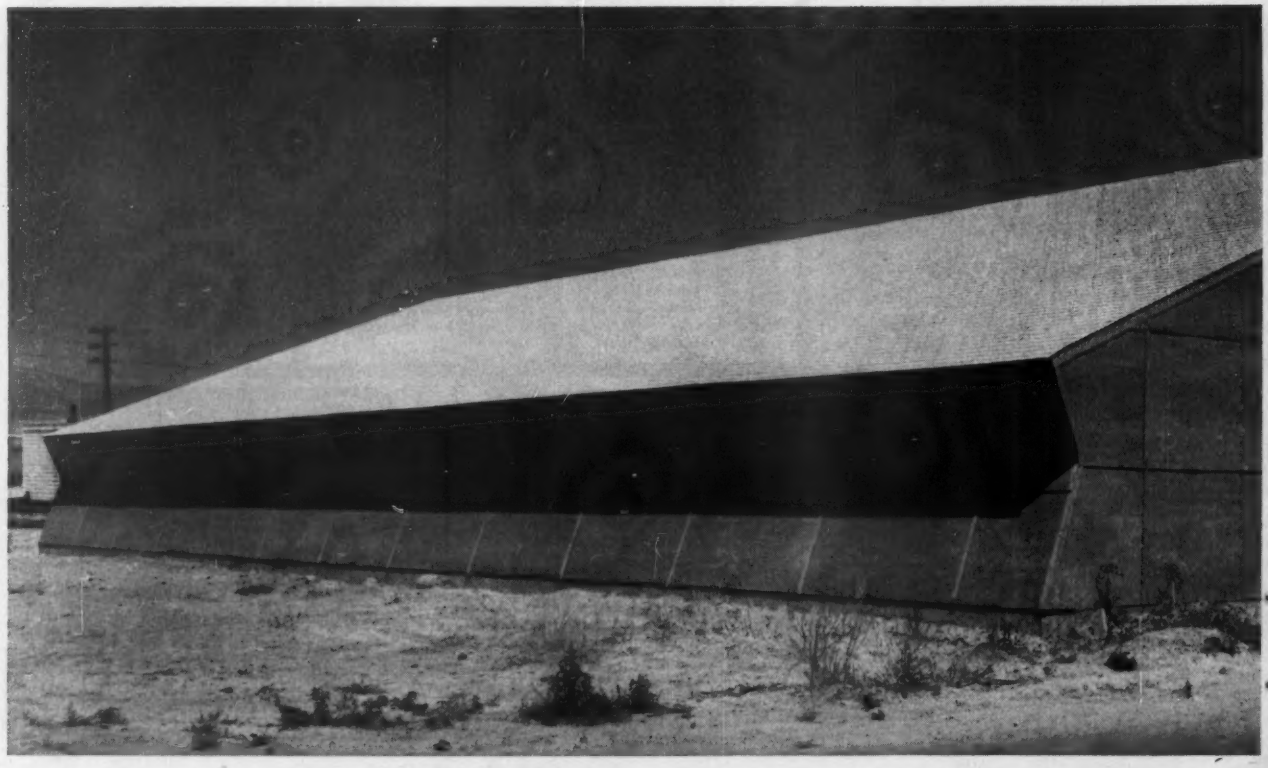
And it's versatile. DFPA engineers have developed building plans for spans of 32′, 40′ and 52′. Several hundred variations in the basic design can be engineered from research information available from DFPA. Variations include different leg heights, spans, frame spacing, roof loads and wall treatments.

The rigid frame design originated from research efforts to develop a low-cost farm building. But the long clear span makes it extremely logical for warehouses, garages, commercial and public buildings, and even residential construction. For more information on the rigid frame system, or for construction plans, write (USA only):

DOUGLAS FIR PLYWOOD ASSOCIATION
TACOMA 2, WASHINGTON
—a non-profit industry organization devoted to research, promotion and quality control

Always specify by DFPA grade-trademarks

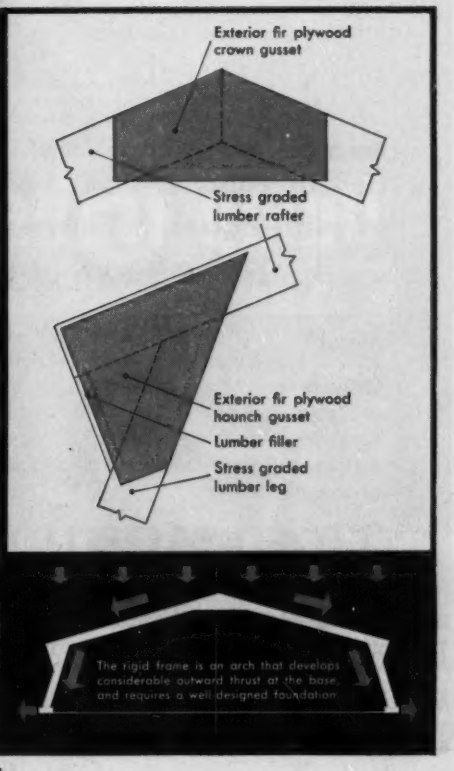
DFPA TESTED QUALITY



a simple construction system less than $1 per sq. ft.

The rigid frame farm building below, 40 x 225', was built in Western Washington for under $1 per sq. ft. Frames, which were built in a jig on the site, are 2 x 10's with gussets of ⅜" Exterior C-C plywood. Siding and roof sheathing are also Exterior plywood. Openings were left in siding to admit light and air.

On this rigid frame warehouse, Exterior plywood siding was unpainted and asphalt shingles went over the plywood roof sheathing. In some applications, sides may be straight instead of sloping in. To design these and other variations, refer to DFPA's basic design data on the rigid frame.


Exterior fir plywood crown gusset
Stress graded lumber rafter
Exterior fir plywood haunch gusset
Lumber filler
Stress graded lumber leg
The rigid frame is an arch that develops considerable outward thrust at the base, and requires a well-designed foundation.

Circle 181 *on Reader Service Card*

EQUIPMENT NEWS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

Epoxy Coating Extends Life of Plywood Forms

A coating containing epoxy resins is sprayed, brushed or rolled on plywood forms for poured concrete to extend their life. Up to 60 uses have been claimed for forms coated with Form-Cote. The coating reduces the weight of forms because they do not absorb water. — Preco Chemical Corp., Westbury, N.Y.

Circle 315 on Reader Service Card

Off-The-Road Vehicle For Towing and Light Hauling

The Haulster is a three-wheel off-the-road vehicle with 470 lb of drawbar pull and an 800-lb payload capacity. Available in two models, pickup type rear box or a chassis model, the unit can operate in a 4½-ft alley and has a turning radius of 90 in.—Cushman Motors, Lincoln, Neb.

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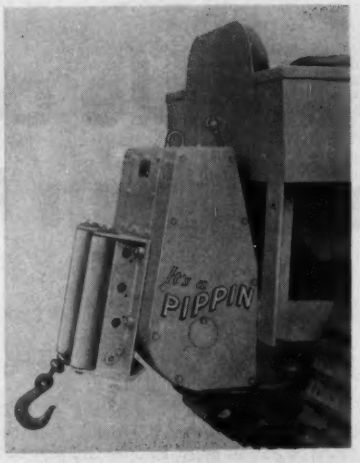

Hydraulically Powered Winch Installs on All Tractors

A hydraulic winch that can be installed on any tractor, wherever hydraulic power is available, is capable of 17,000 lb of line pull. The winch has no flexible packings, clutch bands, brake bands, or gears. The cable drum is powered by two hydraulic cylinders, each with cast iron piston and rings.—Windsor Pippin Corp., Windsor, Vt.

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Dump Trailers

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Trailmobile offers you many types of dump trailers plus an unlimited variety of optional features to meet any requirement. Hoppers also available. Choose the ideal trailer and the most convenient financing plan. For complete information, call the Trailmobile office nearest you or use the coupon.

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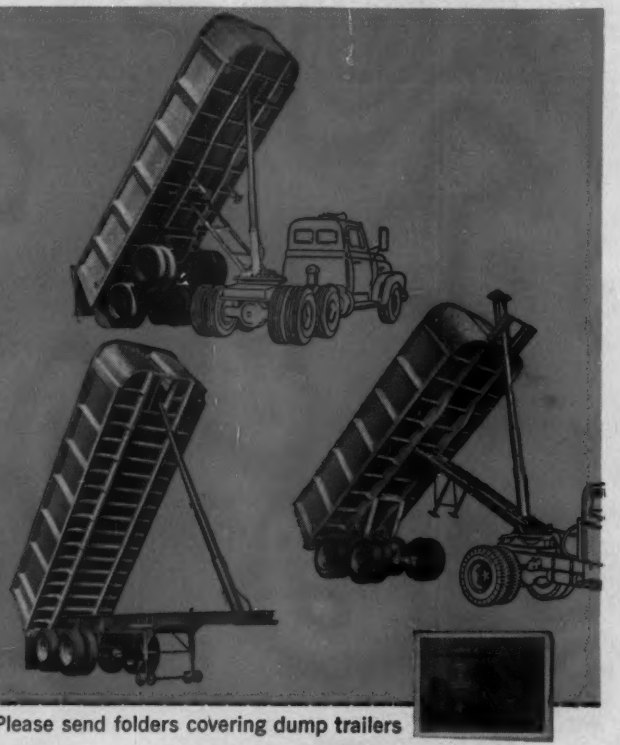

Trailmobile Inc., 31st & Robertson, Cincinnati 9, Ohio • Please send folders covering dump trailers

*name*_____ *company*_____

*address*_____ *city*_____ *zone*____ *state*_____

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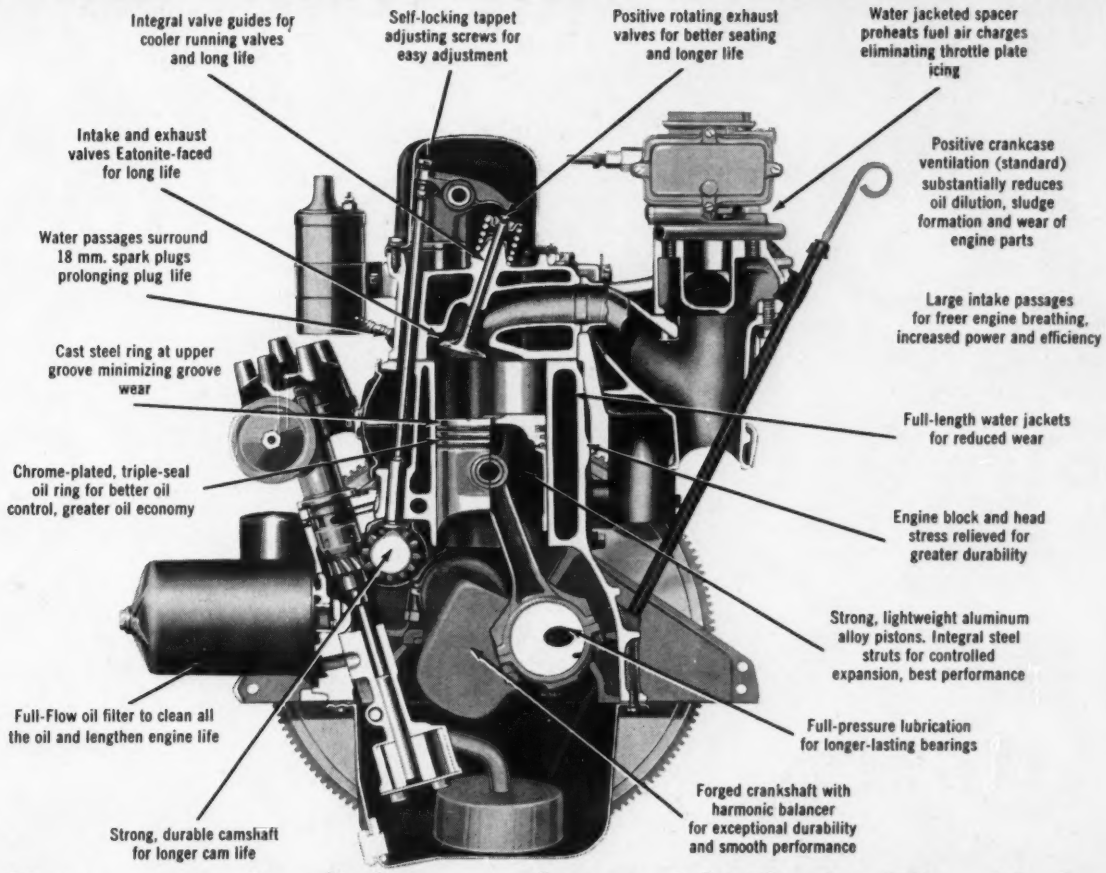
ALL-NEW 262 CUBIC INCH SIX JOINS FORD INDUSTRIAL ENGINE LINE


Integral valve guides for cooler running valves and long life
Self-locking tappet adjusting screws for easy adjustment
Positive rotating exhaust valves for better seating and longer life
Water jacketed spacer preheats fuel air charges eliminating throttle plate icing
Intake and exhaust valves Eatonite-faced for long life
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Water passages surround 18 mm. spark plugs prolonging plug life
Large intake passages for freer engine breathing, increased power and efficiency
Cast steel ring at upper groove minimizing groove wear
Full-length water jackets for reduced wear
Chrome-plated, triple-seal oil ring for better oil control, greater oil economy
Engine block and head stress relieved for greater durability
Strong, lightweight aluminum alloy pistons. Integral steel struts for controlled expansion, best performance
Full-Flow oil filter to clean all the oil and lengthen engine life
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Forged crankshaft with harmonic balancer for exceptional durability and smooth performance
Strong, durable camshaft for longer cam life

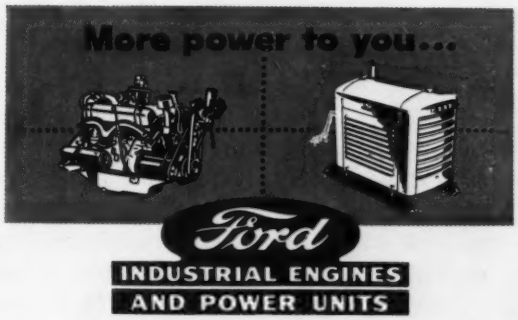
Now . . . more six-cylinder power for your job! The durability of heavy-duty construction—the gas economy of six-cylinder design—they're all yours in one engine, the all-new Ford Big Six!

Built to last with many heavy-duty features, the all-new Big Six teams dependable performance with durability and gas economy . . . advantages you'll find in *every* Ford engine!

All Ford engines are *compact*, overhead-valve design . . . delivering *more* horsepower per pound of engine weight *than ever before possible!*

Ford parts are as near to you as your Ford Dealer . . . and there's a nationwide network of Ford Industrial Products Dealers to provide you with fast, efficient service.

For help in choosing the *right* power for *your* job, write to the address shown below. You have 13 different engine displacements to choose from.



INDUSTRIAL ENGINE DEPARTMENT, FORD DIVISION, FORD MOTOR CO., P.O. BOX 135, DEARBORN, MICH.

West of Rockies write to:
FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 6787, LOS ANGELES 22, CALIF.
FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 1666, RICHMOND, CALIF.

Circle 183 on Reader Service Card

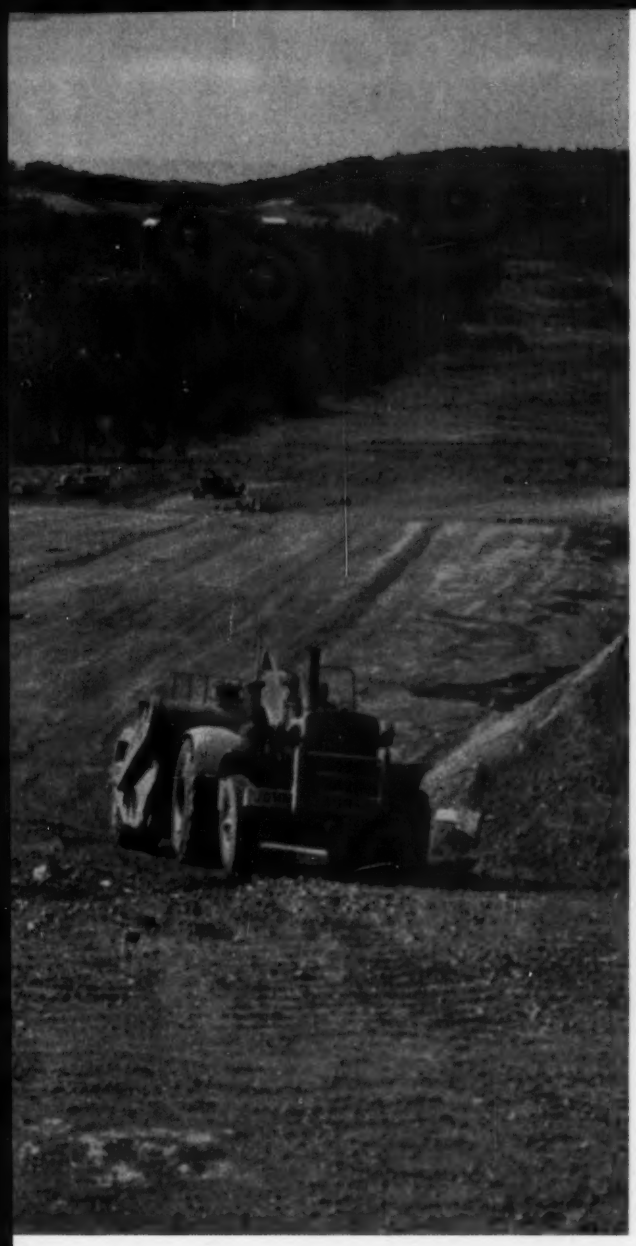
Contractor's experience with Gulf on $4 million highway job...

When John L. Burns, Inc., Nashville, Tenn., was awarded the contract on an 8.6 mile stretch of Interstate 75 north of Dalton, Ga., one of the first steps was to contact Gulf in that area. From experience, the Burns people know Gulf quality products and service play a big part in keeping jobs on schedule.

The Interstate 75 contract calls for Burns to do the complete job—from the first scraper full of excavation to the final foot of asphalt. It requires moving some 4 million yards of shale, rock and dirt. It has to be completed in 450 days.

Stacy Whitt, Superintendent for Burns, is confident the project will be completed on schedule, and profitably. "We've got good maintenance procedures and reliable lubricants and fuels," he commented. "And, if we need something to keep us on our toes, we know that an hour's downtime on just one machine costs us about $90."

To guard against this costly downtime, these Gulf products are on the job: Gulf Super-Duty Motor Oil in crankcases for all heavy duty earth moving equipment; Gulflex® A for all grease applications; Gulf



This well equipped truck delivers fuel and lubes to equipment on the job.

Left to right — C. R. Reese, Jr., Gulf Representative, Stacy Whitt, Project Superintendent and J. L. Bond, Gulf Distributor, discuss petroleum requirements. Job site engineering counsel is always available from Gulf.

Early stages of the job require the removal of 500,000 yards of dirt and shale from this 75 ft. deep cut.

products dictates use
GULF MAKES THINGS RUN BETTER!

Multi-Purpose Gear Lubricant for all enclosed gear drives; and Gulf diesel fuel and No-Nox® gasoline for all power requirements.

Gulf quality products are available through more than 1500 warehouses to help you get top performance from your equipment and lower maintenance costs. May we have the opportunity to quote on your next job? Contact your nearest Gulf office, or the address given below. For helpful maintenance tips, and more information on Gulf products write for a copy of the "Contractors' Guide."

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ALPHA

BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS

news and notes from the field

THE HIGH COST OF MIXING WATER

Careful job-site control of mixing water is essential for getting the best results in all types of concrete construction. Too much mixing water is a danger recognized by most construction men, and unfortunately the real damage resulting from excess water often shows up too late to be remedied without extensive costs.

Examples of Delayed Damage From Too Much Mixing Water

1. Cracks in foundations—Foundation walls and floors crack excessively from high shrinkage and low tensile strength caused by excessive mixing water.

2. Freeze-thaw damage in pavements—Air is entrained in concrete to protect it from freezing and thawing damage. When the slump is greater than 5 inches, there is danger of the air content decreasing which reduces this important protection.

3. Sand streaks in foundations—excess water bleeds up the sides of forms, washing out the cement paste, and leaving a streaked, raw, unattractive wall surface.

4. Dusting floors—as concrete bleeds, water comes to the surface. If there is excessive bleeding, the water brings aggregate fines to the surface which often cause dusting and crazing.

5. Leaky walls and wet floors—Both can result from excessive voids in concrete caused by too much water.

The Water/Cash Ratio

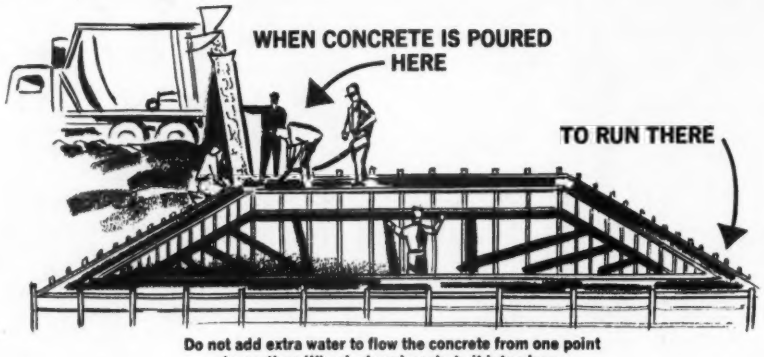
Much has been said and written on the subject of controlling the amount of mixing water, here it is expressed in terms everyone understands: money. To change a typical mix from a 2-inch slump to a 9-inch slump by adding water costs as much as $7.50 per 5-yard load if the strength is maintained. Here's why:

1-In. Gravel Mix, W/C = 6 Gal./Bg. (4000 psi)

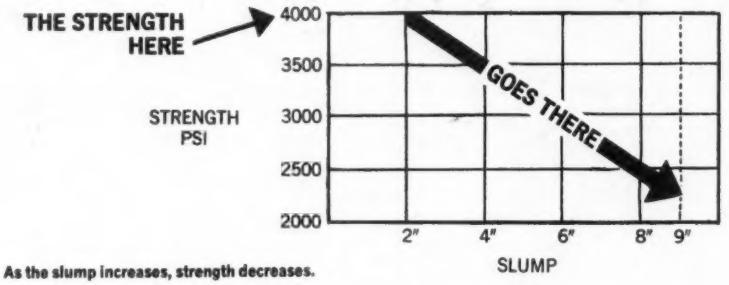
Total water used for 2-in. slump: 30 gal.
Total water used for 9-in. slump: 39 gal.
39 gal. − 30 gal. = 9 gal. excess water added

Required Cement for 6 Gal. W/C Ratio

2-in. slump, 30 ÷ 6 = 5 bags of cement needed
9-in. slump, 39 ÷ 6 = 6½ bags of cement needed



Do not add extra water to flow the concrete from one point to another. Wheel, shovel or chute it into place.



As the slump increases, strength decreases.

6½ bags − 5 bags = 1½ bags additional cement needed to maintain the 4000 psi strength

Extra Cost of 9-In. Slump Per Yd., 4000 psi Concrete

Extra cement costs
Approx. $1.50 per yard

In other words, the extra water costs
$7.50 per 5-yard load

or .....$ .17 per gallon
(figures are approximated)

The cost of mixing water should never be underestimated. Repairs to the structure and damage to the contractor's reputation can be far-reaching and costly . . . it's at this point where the water/cash ratio comes into being—is most easily recognized.

Concrete Has a Bright Future

Concrete is one of the most flexible and widely used of all construction materials. Based on recent advances and the growing trend in design and construction, concrete will continue to grow in favor among engineers, architects and customers. This is why Alpha is promoting these helpful tips on concreting as a continuing program to help improve concreting practices.

Reprints of this information are available free of charge. Contact your local Alpha Representative or write to Alpha's home office.

ALPHA

PORTLAND CEMENT COMPANY

Alpha Building, Easton, Pa.

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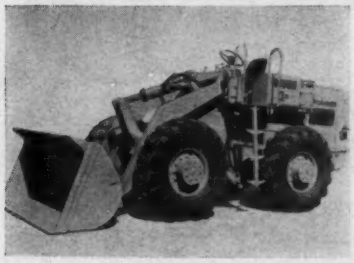

New Loaders Feature Simplified Maintenance

Two four-wheel-drive front-end loaders have been added to the Hough Payloader line. Model H-60 has 1¾-cu-yd capacity and Model H-70 has 2½-cu-yd bucket. The new units feature fewer pivot and grease points in the boom and bucket control assemblies and fewer parts to reduce maintenance. All steering, bucket, and boom pivot points have seals. Three hoses service the hydraulic system. The H-60 is gas or diesel-powered at 110 or 107 hp. Optional buckets range to 3½ cu yd. A 148-hp diesel engine powers the H-70 series, which can also be fitted with buckets up to 5 yd capacity.—Frank G. Hough Co., 706 Seventh Ave., Libertyville, Ill.

Circle 318 *on Reader Service Card*

Lightweight Concrete Saw Suited for Rough Cutting

The 200-lb EDCO concrete-asphalt saw is available with either a 7-hp gasoline or 3-hp electric motor. The unit has a ¾-in. arbor to handle portable saw abrasive blades as well as standard concrete and asphalt cutting blades from 6 to 12 in. in dia. A water feed attachment is standard on all models for use with diamond blades. — Equipment Development Co., 2700 Garfield Ave., Silver Spring, Md.

Circle 319 *on Reader Service Card*

Weight Distribution Gives Drill Stability

A new ¼-in. hand drill has its motor below and at a right angle to the drilling axis for greater accuracy and less wobbling. The Dirk, which will drill through concrete, has a 3-amp, 1,800-rpm motor.—Disston Div., H. K. Porter Co., Inc., Pittsburgh 19, Pa.

Circle 320 *on Reader Service Card*

Records from construction, logging and drilling firms prove off-the-road steel cord tires reduce downtime and cut operating costs—no matter how heavy the loads or how rugged the job. They provide many more hours of trouble-free service than conventional textile tires.

With thinner sidewalls, they run 20°F cooler. Yet sidewalls are up to 10 times stronger—for added resistance to blowouts, impact breaks, cutting and abrasions. They're fortified with 4 plies of 400,000 psi high tensile carbon steel wire from bead to bead. Steel cord tires have a double extra-ply rating— solid proof of strength and high load capacity.

New, technically improved steel cord tires make seldom-needed repairs easy.

Increase service hours and number of retreads by specifying tires made with Bekaert Steel Wire Cord.

Write for free data booklet

PLEASE SEND ME A COPY OF YOUR BOOKLET

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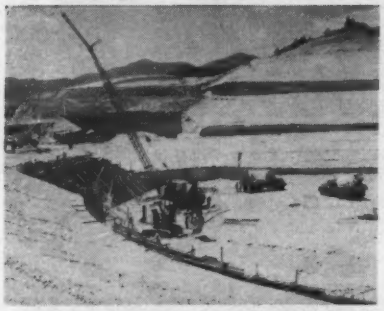
Circle 187 *on Reader Service Card*

NEW concrete forming method shapes Air Force Academy Stadium



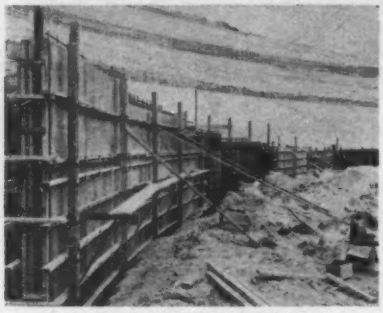
JAHN low-cost, PRECISION FORMING METHOD

saves time, labor, materials

Huge Falcon stadium, to seat 40,000 football fans at the Air Force Academy near Colorado Springs, Colorado, represented a major forming job for the B. H. Baker, Inc., construction company.

They solved the problem with JAHN Forming Brackets and loose ¾-inch 4x8 plywood panels, with standard 2x4 walers and double 2x4 strongbacks...all standard lumber yard materials.

JAHN low-cost, precision forming brackets are inexpensive, simple and easy to use. Forms can be set up to meet the most exacting architectural tolerance requirements, to any height, even curved walls.



NO NAILS REQUIRED—MAKES STRIPPING EASY AND QUICK

Quick, simple set-up and fast, easy stripping are features of the JAHN FORMING METHOD. Low cost, standard materials can be used over and over again, cutting costs to a very minimum.

In home-building and small apartment construction, ⅝-inch plywood panels are used for the forms, then utilized for sub-flooring or sheeting, eliminating the need to haul forming materials away from the job.

GET FACTS, INFORMATION, PRICES

Write or phone today for detailed information, prices and your nearest dealer for Jahn Precision Forming Brackets. Find out about the fastest growing, money-savin'est idea in the construction industry today. Phone SKyline 7-0301—or write—

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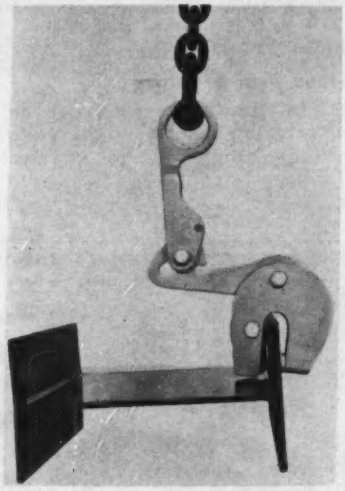
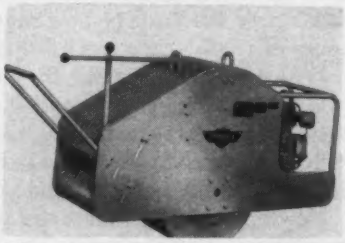


Lifting Clamp Holds Beam For Crane Operations

The Renfroe lifting clamp, in two models, has a gripping ratio of 3¾ to 1 to hold I-beams and structural shapes when being lifted by a crane. Model STL has an automatic release mechanism that allows the crane operator to disengage the clamp without assistance.—J. C. Renfroe & Sons, Inc., 1926 Spearing St., Jacksonville, Fla.

Circle 321 on Reader Service Card



Vibratory Compactor Suited For Work in Close Quarters

Essick's vibratory compactor has an overall width of 17½ in. and a 13-in. wide drum for compaction around foundations, trenches, and narrow backfilling applications. The VR-13W is 71½ in. long, 36 in. high, and weighs 700 lb. A 4.8-hp engine powers the self-propelled unit at 1 mph in either direction. The vibrating mechanism can be disengaged separately during operation. — Essick M'g. Co., 1950 Santa Fe Ave., Los Angeles 21, Calif.

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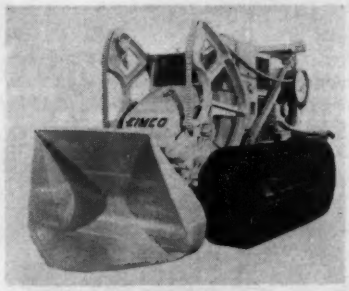

New Eimco Excavator Is Electrically Powered

The latest Eimco crawler tractor is an excavator powered by a 100-hp, 50 or 60-cycle ac electric motor of from 220 to 550 v. The 38,500-lb unit has a bucket capacity of 1 cu yd, and travels up to 4.2 mph in forward or reverse. The excavator has two speeds in both transmission and bucket controls.—Eimco Corp., Salt Lake City, Utah

Circle 323 on Reader Service Card

Strong Thrust Featured On New Pipe Pusher

Able to operate at a force up to 35 tons with a 5-in. stroke, this pipe pusher attaches to most tractor-mounted hydraulic backhoes. Direction can be reversed by adjusting two drag springs. The rig includes cribbing, 50-ft push rod, and pusher cap.—Pow-r Devices, Inc., Clarence Center, N.Y.

Circle 324 on Reader Service Card

Electrode for Aluminum Welding Operates in All Positions

An electrode with an extruded coating is for use with aluminum plate, sheet and casting, with direct current reverse polarity. The Airco 43 can be used in flat, vertical, and horizontal positions, and provides tensile strength yields up to 28,000 psi. The electrode comes in two sizes: ⅛ in. dia, 14 in. long; and 5/32 in. dia, 16 in. long.—Air Reduction Sales Co., 150 E. 42d St., New York 17, N.Y.

Circle 325 on Reader Service Card

There's a type and size just right for your job!

R-10 10 TONS

R-15 15 TONS

R-18 18 TONS

R-22 22 TONS

R-27 27 TONS

R-45 45 TONS

R-62 62 TONS

PLUS

12, 22 and 35-TON Semi-Trailer Rear-Dumps

Whatever your off-highway hauling work may be—heavy construction, mine, quarry and industrial jobs—there's a job proved "Euc" that can cut your costs and step up production. With unmatched field experience and parts and service facilities of a world wide dealer organization, Euclid Rear-Dumps meet today's requirements for big performance on the toughest jobs.

For facts and figures proof that "Eucs" can mean lower costs on your work and are your best investment, call the Euclid dealer that serves your area.

EUCLID Division of General Motors, Cleveland 17, Ohio
Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

GM GENERAL MOTORS EUCLID

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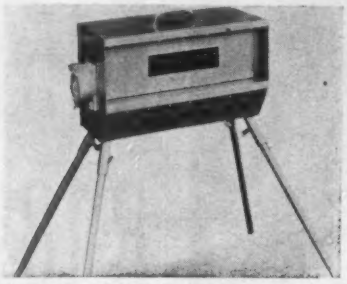
FOR MOVING EARTH, ROCK, COAL AND ORE

EQUIPMENT NEWS . . .

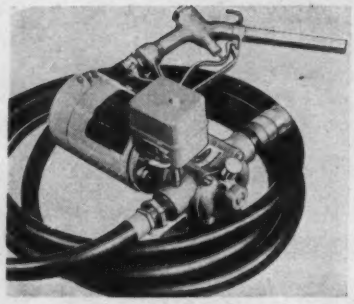
For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.



Portable Distribution Center For Temporary Power

A 30-lb, 120/240-v ac portable distributon center of 50-amp capacity with overload and short circuit protection is designed for use at sites requiring temporary power. The load center has six 15 amp, 120-v outlets for power tools and one 20-amp, two-pole 240-v outlet which can be used for welding.—Leonard Electric Mfg. Co., Cleveland, Ohio.

Circle 326 on Reader Service Card



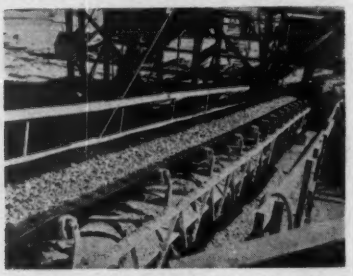
Electric Pump Transfers Fuel From Pickup Truck

An electric, 20 gpm fuel pump can be controlled from the nozzle in on-the-job transfer of gasoline from a pickup truck to motorized equipment. The 6 or 12-v dc unit is battery operated. The motor starts and stops when the nozzle is opened or closed.—Jerome Simer Co., Minneapolis, Minn.

Circle 327 on Reader Service Card

Rubber Conveyor Belt Moves Soupy Materials

A new conveyor belt has chevron-shaped ribs or cleats that prevent wet material or water from draining off in the handling of slippery materials. Designed for moving mixtures such as water and gravel, the belt can be reversed so that



water will drain out of the mixture if desired.—Raybestos-Manhattan, Inc., Passaic, N.J.

Circle 328 on Reader Service Card

New Stud Driver Features Safety

In a new powder actuated stud driver, power is transmitted to a plunger which moves at a relative- slow speed to push the stud into the material, eliminating ricochets and concrete breakage around the stud. A gas control chamber eliminates powder marks—Sileps, Inc., Charlotte, N.C.

Circle 329 on Reader Service Card

To the contractor considering concrete precasting:

FMC IS FIRST IN STEEL FORMS

THEY STAY FIRST BY HELPING YOU

Providing the best forms, and backing them up with the best service keeps FMC on top. Profitable casting operations depend not only on steel forms that produce uniform, accurate members, but on forms that are designed for contractors' efficient use. FMC offers a broad line of quality steel forms for the contractor, plus years of form design experience that can save you dollars and time. FMC's capable, qualified engineering force and field engineers are always at your disposal for facts and figures on form design. Get the benefit of experienced engineering, superior service and the finest Form-Crete steel forms. Before you bid—contact FMC.

Send for your free copy of the #400 Form-Crete Catalog. Describes the entire form line and is a handy reference.

Putting Ideas to Work

Form-Crete Department

fmc CORPORATION

General Sales Offices: Lakeland, Florida

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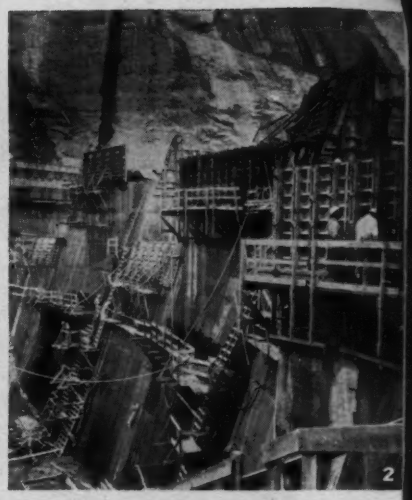
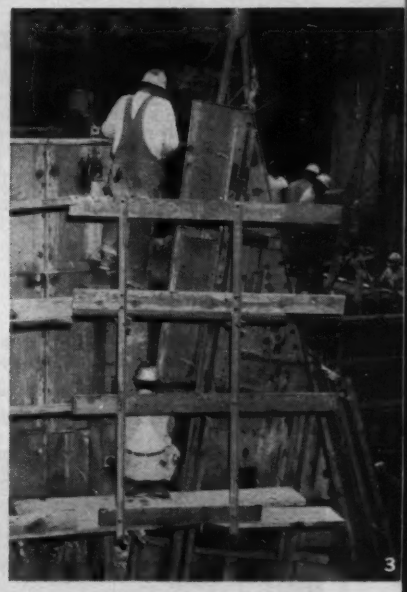




BLAW-KNOX STEEL FORMS SHAPE GLEN CANYON DAM

re-used up to 100 times

The $108 million Glen Canyon Dam, being constructed by Merritt-Chapman and Scott Corporation of New York, uses Blaw-Knox heavy steel forms to shape the 5 million cu. yds. of concrete being poured. In addition, 225,000 cu. yds. will be required for the power plant; 150,000 cu. yds. already have been poured, using Blaw-Knox forms, for the diversion and spillway tunnels.

Specially designed, steel, cantilever forms are used on this third-largest dam in the country. They will be re-used up to 100 times and thus become a major cost-reducing factor.

Concrete is poured in 7½-ft. lifts, many measuring 70 by 170 feet, and one lift of this size can be poured in eight hours using Blaw-Knox 12 cu. yd., hydraulically operated concrete buckets.

The forms are stripped and raised in as little as four hours, and nearly 2 miles of these will be used.

Wherever the big jobs are, you will find Blaw-Knox heavy steel forms being used to give the shape of things to come. Call Blaw-Knox steel forms consultation service early in your planning for important engineering help. Blaw-Knox Company, Pittsburgh 38, Pa., phone Sterling 1-2700.

1. This panoramic view shows the many Blaw-Knox steel forms being used during concrete placement on the upstream and downstream faces of the dam and the powerhouse foundation.

2. This view of the downstream face of the dam shows how Blaw-Knox steel forms are used in 7½-foot lifts.

3. Final bolts are tightened on a 70-foot form section on the upstream face of a lift while other workmen prepare to raise the key form on the transverse construction joint side. 1½-inch diameter bolts are removed from anchors after concrete has set. Forms then are stripped and raised into position for the next lift.

4. Four special, self-powered, hydraulically operated Blaw-Knox concrete buckets of 12 cu. yds. capacity are used to pour the concrete. Each bucket has a roller gate opening 4 feet by 4 feet and can be stopped in any position. Permits dribbling of concrete. These are the largest buckets in the world of this type. Concrete is moved from a 20-story high batch plant via cableway.

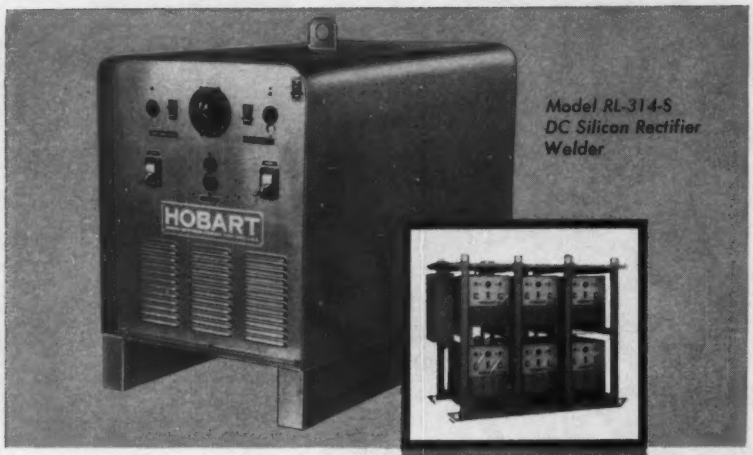
BLAW-KNOX

Steel Forms

BLAW-KNOX

Blaw-Knox designs and manufactures for America's growth industries: METALS: Rolling Mills • Steel Processing Lines • Rolls • Castings • Open Hearth Specialties • PROCESSING: Process Design, Engineering and Plant Construction Services • Process Equipment and Pressure Piping • CONSTRUCTION: Concrete and Bituminous Paving Machines • Concrete Batching Plants and Forms • Gratings • AEROSPACE: Fixed and Steerable Antennas • Radio Telescopes • Towers and Special Structures • POWER: Power Plant Specialties and Valves

Circle 191 on Reader Service Card



Model RL-314-S
DC Silicon Rectifier
Welder

New "Lowboy" welder is packed with production-improving features

Unitrol — exclusive single dial controls wider current range than any other welder of its size • Entire range can be remotely controlled • Silicon rectifiers are permanently sealed for superior corrosion resistance, long trouble-free life • Supplies 110v. AC power for hand tools • Can also be used for cutting, gouging • Available in 300 and 400 ampere models.

Construction contractors like the compactness of equipment out on the job where six welders can be easily spotted or quickly moved as a unit for operating crews. Single connection to fused disconnect switch puts six welders into operation without delay.

Write for data sheet A-133-E

Hobart Brothers Company, Box 6101, Troy, Ohio, Ph. FE 2-1223
Circle 192 *on Reader Service Card*

MAYO Tunnel Cars

. . . feature practical designs and rugged construction. All cars can be equipped with Mayo's safe, automatic couplers.

- Side Dump Car (shown) has 2½ cu. yd. capacity. 24" gage.
- Rocker Dump Car. Ideal for sticky muck or wet concrete. 1 cu. yd. capacity 24" gage.
- Tunnel Car. Box body is removable and may be hoisted to surface to be dumped into truck. ½ to 2 cu. d. capacity. 18" or 24" gage.

FREE Bulletin No. 18-b shows car details: No. 22 illustrates Automatic Coupler.

Area Code 717
Express 4-2824

MAYO
TUNNEL AND MINE EQUIPMENT
LANCASTER, PENNA.

Circle 254 *on Reader Service Card*

when you repower big machinery . . .

- input torque 150 to 2500 ft-lb
- standard or engineered to order
- low-cost production, whether quantity is 1 or 100
- all gears alloy steel—heat-treated
- all shafts mounted on ball or roller bearings, precision aligned

come to COTTA for heavy-duty transmissions and speed reducers

diagrams, complete specs sent free on request

COTTA
TRANSMISSION CO.
ROCKFORD, ILLINOIS

Circle 255 *on Reader Service Card*

New Product Briefs

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

WARNING LIGHT revolves 360 deg 90 times per min to alert distant traffic day or night. The Roto Flash is available up to 110 v.—Trippe-Lite.

Circle 330 *on Reader Service Card*

HARD HAT in plastic is light in weight, adjustable to head sizes from 6¼ to 8, and features break-away chin strap.—American Optical Co.

Circle 331 *on Reader Service Card*

ICE MELTING spray from a can will thaw frozen locks on machinery, remove windshield ice. — Speco, Inc.

Circle 332 *on Reader Service Card*

TWO-WAY RADIO equipment on the uncrowded UHF 450 megacycle band is for mobile installation.—Radio Corp. of America.

Circle 333 *on Reader Service Card*

PLASTIC PIPE has been introduced in a new line of underground electrical conduit.—Lasco Industries.

Circle 334 *on Reader Service Card*

BULK FILLER units, one designed for tower batching plants and the other for horizontal plants, are mobile.—Hetherington & Berner.

Circle 335 *on Reader Service Card*

TIRES for off-road vehicles are being built with millions of tiny pieces of wire in the undertread for durability, as a standard feature in larger sizes.—Goodyear Tire & Rubber Co.

Circle 336 *on Reader Service Card*

FIREPROOFING material applied directly to steel through plaster machines has 5-hr rating for 1¼ in. applied to beams, 3-hr on metal deck systems. — Zonolite Co.

Circle 337 *on Reader Service Card*

CHECK VALVES prevent mixture of fuel gas and oxygen, a common cause of fires, on all makes of torches, line and cylinder regulators.—Harris Calorific Co.

Circle 338 *on Reader Service Card*

continued on page 194

GOING UNDERGROUND TO STORE LPG?

Minimize rock falls with Bethlehem roof bolts.

There's no need to worry about roof stabilization in underground storage areas. Most roof problems can be solved by the installation of Bethlehem roof bolts. Thoroughly proved in mines and tunnels, bolting minimizes rock falls by clamping strata together to create a stable roof.

Bolts are easy to install

The first step is to survey the strata to determine the best bolting pattern. Next the holes are drilled. Then roof bolts, in predetermined lengths and diameters, are installed to proper torque for local conditions.

Our bolting experts are at your service

To help you get your men started, Bethlehem roof-bolt engineers will show you how to test, and give you some pointers on installation procedure. Feel free to ask for their help without obligation.

Want more information? Just phone the nearest Bethlehem sales office. Or write to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Steel

for Strength . . . Economy . . . Versatility

WHEN CONSTRUCTION JOBS CALL FOR SOIL COMPACTION

BARCO is the ANSWER!

When You're Figuring For The "Low Bid"—No other tool can give you the economy and dependability offered by Barco Rammers on high degree soil compaction for all kinds of projects—Highways, Freeways, Hydro-electric Power and Flood Control Dams, Airports, Bridges, Defense Sites, Buildings, and Housing Developments!

When You Have To Meet Tough Specifications—In test after test, Barco Rammers have demonstrated their ability to deliver 95% to 97.5% compaction (modified Proctor Method)—EASILY! EFFICIENTLY! ECONOMICALLY! The Barco Rammer is especially useful for compacting fill in restricted areas. ASK FOR A DEMONSTRATION.

When You're Up Against A Tight Schedule—One of the biggest advantages offered by Barco Rammers is ability to handle work in minimum time. On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On trench back fill, using lifts up to 24", the rate for 18" trench is 360 to 600 feet per hour. *When time is at a premium,* BARCO PERFORMANCE PAYS DIVIDENDS—find out about it NOW!

Sold and Serviced by the Nation's Leading Distributors

For Soil Compaction Close to Walls, Culverts and Abutments —in Trenches, Ditches

FOUNDED 1908

BARCO BARCO RAMMER

PRODUCTS BACKED BY EXPERIENCE

BARCO MANUFACTURING CO.
5121 Hough St., Barrington, Illinois

Gentlemen:
YES! I want to know about Barco Rammers for Soil Compaction:

Name_____

Company_____

Address_____

☐ Please send me the name and address of your nearest dealer.

☐ Without obligating me, I would be interested in a DEMONSTRATION.

☐ Please send General Catalog No. 621.

☐ Please send free bulletin on "SOIL COMPACTION COST DATA."

Circle 194 on Reader Service Card

NEW PRODUCT BRIEFS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

SEWER, DRAIN cleaning machines and tools are available in a new line from suction cups to power machines.—Oster Mfg. Co.

Circle 339 on Reader Service Card

PORTABLE PUMP moves 3,300 gal of water per hr. Powered by 2½-hp vertical engine, unit weighs 40 lb.—Peerless Pump, FMC Corp.

Circle 340 on Reader Service Card

OIL FILTER with 300 gpm capacity has two-stage filtration to trap particles 8 to 10 microns in size. —Vickers Inc.

Circle 341 on Reader Service Card

SAWHORSE made of plywood is assembled in seconds, held together by notched joints. It will withstand 5,115 psf of concentrated pressure. — West Coast Forest Products, Inc.

Circle 342 on Reader Service Card

MEGAPHONE has a 16-w amplifier powered by 10 flashlight cells. The Super-Hailer is an industrial model of the AN/PIQ-5 system used by the Marine Corps.—Audio Equipment Co.

Circle 343 on Reader Service Card

MIDGET VIBRATOR is 3 in. long, operates on 10 to 80 psi line pressure at frequencies from 6,000 to 18,000 vibrations per min.—Branford Co., Div. of Electro Mechanics, Inc.

Circle 344 on Reader Service Card

PATCHING compound for concrete that dries in less than an hour may also be used to anchor bolts for machinery.—Stonhard Co.

Circle 345 on Reader Service Card

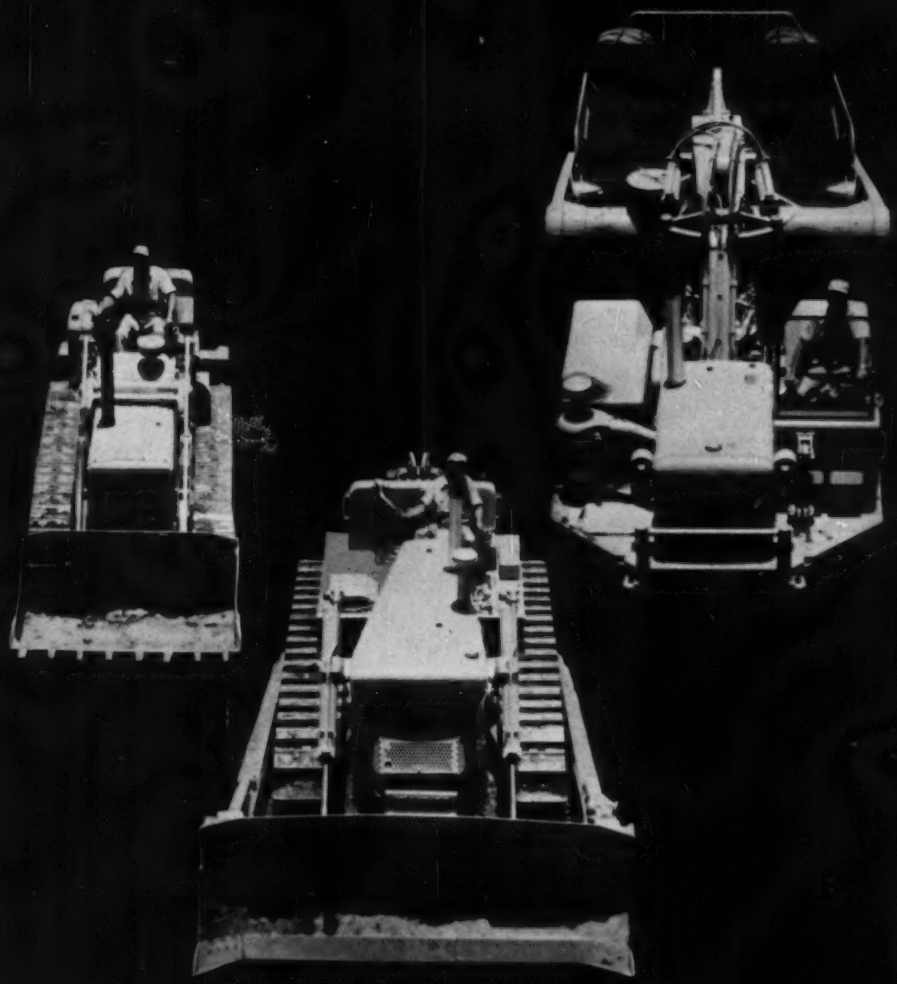
PLIERS that are spark-resistant are now available in four sizes from 16-in. long, 4-in. capacity to 6½-in. long, 1-in. capacity.—Ampco Metal Co. Inc.

Circle 346 on Reader Service Card

STRADDLE TRUCK line features open masts for visibility, less weight for reduced drain on battery that powers it. New models will operate in 6-ft-wide aisles. —Raymond Corp.

Circle 347 on Reader Service Card

continued on page 203



CATERPILLAR REPORTS

On the following pages:

Why three different Cat power shifts?

How loader power shift cuts cycle time . . .

Production test—D8 PS vs. D8 DD

"Hit the floorboard and let 'er roll"

How rugged is Cat power shift?

Why you get more production from a Cat power shift:

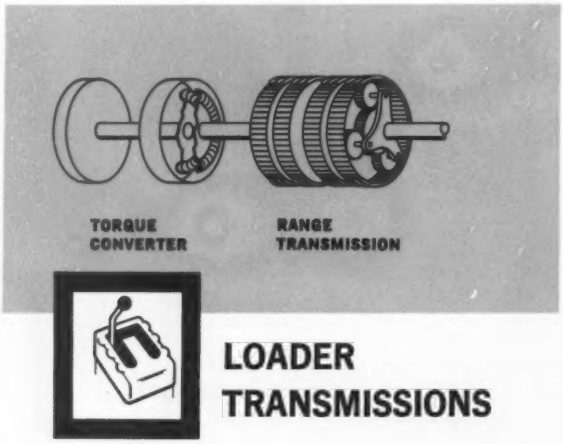
THREE DIFFERENT

THREE DIFFERENT

Any workable power shift transmission has great advantages over direct drive. By doing much of the operator's routine physical work for him, it reduces fatigue, lets him work faster and more productively.

So, if power shift is good, why not pick one proven type of power shift transmission and use it on all types of machines? Many earthmoving manufacturers do just this and come up with good results.

Unfortunately, "good" isn't necessarily "best." No one general purpose power shift transmission can get the *best* production out of every type of machine. So Caterpillar builds three different



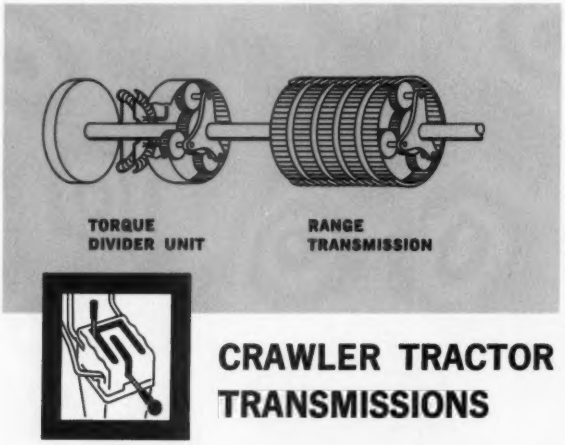
LOADER TRANSMISSIONS

Front-end loaders—both wheel and track-type—work on fast, short cycles. They crowd, dig, reverse and turn, dump, back away and crowd the pile again. They don't move far, but they move fast, cycling a couple times a minute. Shifting and bucket action must be fast and effortless if the operator is to keep up the pace all day. Maximum bucket power is needed to get full loads every time.

Full torque converter drive coupled with a power shift transmission is the combination for this application. It allows the operator to crowd the pile hard without pulling the engine down, thereby maintaining full power to bucket controls.

Travel is too short and variable to realize the efficiency of direct drive. The automatic matching of speed and torque to job conditions makes full torque converter drive the best. The operator need only watch the bucket and where he is going. When he is ready to change direction, he simply moves one short lever and he's off in the opposite way.

Power shift is standard on all wheel-type Cat Loaders and on the 977H and 955H track-type Loaders.



CRAWLER TRACTOR TRANSMISSIONS

Crawler tractor work has some of the features of loader work, plus longer travel. This application can use the advantages of both torque converter and direct drives. Take a typical job—dozing. Torque converter drive automatically provides the high torque multiplication without shifting to meet the changing load conditions while digging. But direct drive is better suited for drifting the load. Direct drive is more efficient, applying most power for pushing the load steadily for faster cycles, more positive control, greater economy.

Since there are advantages in both methods of drive, Caterpillar combines them in its power shift transmission for crawler tractors. Power is sent to a three-speed, directional transmission through a torque divider unit, with approximately 60% of engine torque multiplied by a converter and 40% bypassing it.

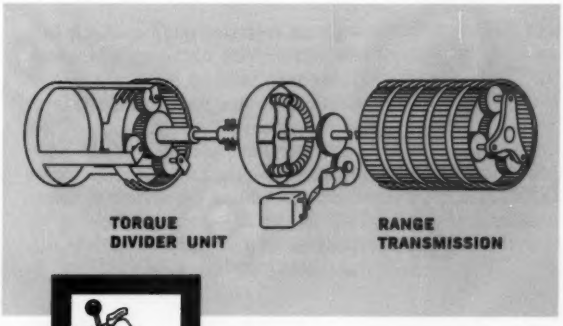
Single-lever power shifting provides instant response, up or down, on the go, in three speed ranges, forward and reverse. Direction can be changed instantly without stopping.

Power shift is standard on the D9G, optional on the D8H.

JOBS—
TRANSMISSIONS

application-matched power shift transmissions for its loaders, crawler tractors and wheel tractors.

Their basic components are similar. But each transmission is designed to get the *most* production from the type of machine it is used in by matching its particular operating requirements.



WHEEL TRACTOR TRANSMISSION

As in the case of crawler tractors, there are advantages in both direct drive and torque converter drive for wheel tractor-scrapers. Variable torque multiplication without danger of stalling the engine is needed when the going is tough, as during loading. But for running down the haul road, direct drive—and overdrive—is more efficient and economical.

However, a wheel tractor's need for torque converter action is considerably less than a crawler's. So in this version of the Cat power shift transmission, only 25% of the torque is multiplied by the converter while 75% bypasses it.

This single-lever transmission incorporates a speed-sensing device that automatically provides three types of drive to the three-speed range transmission—for nine speeds with just three shifts. The torque converter is used only in torque divider drive—where it is needed to keep engine speed high. The converter is automatically locked out of direct drive and overdrive in all three operating ranges for better efficiency.

Power shift is standard on the 630A and 631A, optional on the 619C.

Phil Whitehouse, Carpentersville, Ill., bought a 977H because he believed that the power shift would be a great timesaver and production booster. And he was right. The operator has even noted that it outproduces a direct drive loader about 30% in the morning, but the gap widens to 50% as the day wears on.

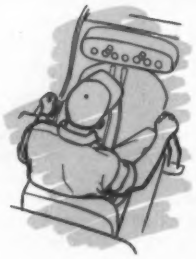
George Andruss, operator for Nelson Brothers, La Harpe, Kansas: "I've stripped 420,000 yards with this power shift D8 in 1190 hours. I figure I pick up about 10 minutes more production an hour compared to a stick shift tractor. And I still feel good at the end of the day. I also like the positive, direct drive feel you get with the power shift."

Frank Hess, co-owner of Hess Construction Co., Long Beach, Calif., says 631s climb hills better than any other machines he's tried. "Automatic shifting really pays off here. The operator doesn't have to worry about a thing—it shifts automatically to make full use of engine power and to keep moving without slowing down. They shift so quick you don't even notice the smaller grades."

How Cat **LOADER POWER SHIFT** cuts time...

1 Crowding the pile demonstrates the value of the Cat torque converter drive when coupled with power shift transmission. Full engine torque and power are transmitted through the torque converter in the transmission. Result: the machine may reduce speed rapidly yet keep pushing hard without slowing the engine, and maximum hydraulic power is maintained to get full bucket loads fast.

2 Fast reversing when bucket is full. With a full bucket, the operator is ready to back up. A simple flick of the wrist moves the power shift lever into reverse. At the same time, his right hand pulls back the lift lever. The automatic kickout then takes over, positioning the bucket at dumping height. Operator is free of all controls to give full attention to maneuvering the machine.



4 Fast dumping. A finger-touch on the transmission lever puts the machine in neutral, while the right hand moves the dumping lever. As bucket empties, operator puts bucket control into tilt-back position and flicks power shift lever into fast reverse. Bucket positioner again takes over, automatically tilting bucket back to proper digging angle as machine backs up.

5 Fast return. Operator watches where he's going—not the controls, quickly shifts to reverse as bucket dumps. Right hand pushes both bucket controls forward, kickout automatically positions bucket for digging angle. Then right hand is free for steering. From crowding the pile to backing from truck, the 955H "never stops"—and handling is effortless.

increases production

3 Fast approach after turning. Operator shifts small lever to forward in one easy movement. Again, response is automatic, practically instant. Cat power shift transmission can be shifted from fast reverse to full forward, without jerking, because of the modulated hydraulic control of its oil clutches. Shifting is always a one-hand operation—no clutching, no stopping.

"Controls are so easy to handle on our Cat power shift 955, the operator keeps up a pace—all day long—that would wear him out on old-style machines in a couple of hours"—reports Curtis Geoghegan, of Lyndon, Kentucky.

Loaders call for fast shifting (and fast bucket action). That's why automatic matching of speed and torque, provided by full torque converter power shift, best matches this type of machine to job conditions. How well does it do?

Curtis Geoghegan expects more from any new model. He figured the power shifting 955H would produce about 25% more than the old direct drive model. "That would be more than enough to make it a good investment," he said. "But were we surprised! This loader is so fast and easy to operate we are getting at least 50% more production—all day long!"

Watching his loader work shows why he gets this increased production: plenty of power, live action hydraulics, automatic bucket controls and fast, job-matched power shift.

CAN YOUR WHEEL LOADER MATCH THIS?

17 tons loaded in 1.3 minutes, that's average production of five trucks loaded at Nello L. Teer's quarry near Durham, North Carolina.

It takes more than a good power shift on a wheel loader to consistently produce more. Compare Nello L. Teer's 2¾-yard Cat 966 with another make loader (with a bigger bucket) on the same job. "I can load up to 100 tons per hour more with the 966," said the operator. The reason? "It's the fast power shift transmission, fast lift and drop of the bucket, fast steering and short turning radius, and the automatic bucket positioner."

The whole machine is *fast*—it practically "bounces off the pile." And with this speed there's an ease of operation that keeps the operator feeling fit even at the end of the shift. The 140 HP 966 is the largest of three Cat wheel Loaders.

How *much* does a Cat Crawler Tractor *power shift* increase production?

The Cat D8 Series H has proven its cost saving and production superiority over other tractors on job after job. But how does the power shift D8 compare with the direct drive—does the additional 7% hourly owning and operating cost pay for itself?

Experience and many tests have shown that it does—by a wide margin. On one recent test, both models were operated side by side to compare dozing ability:

Material—clay with low sand content

Conditions—pit 50′ long; drift distance 150′

Average hourly production—direct drive: 145 b.c.y.
power shift: 185 b.c.y.

You might not get this same yardage on your job, but you should get the *27.6% increase!* And, even considering the higher cost of the power shift, it still shows a cost advantage of 17.8%.

What made the big difference? It wasn't the load on each pass. Each machine averaged 4.5 yards per trip. But the power shift D8 made *more trips* in the same time.

With power shift, the operator had practically effortless control. Under his left hand was one small lever that let him change direction or speed range in a split second—no clutching, no lost time. The operator started digging in "second"—then shifted down on-the-go to "first" to get a full blade load in a hurry. Just a flick shifted it back up to "second" for fast drifting. Shedding the load, another easy move swung the lever around into high-speed reverse for a fast return. Quick, easy shifting gave shorter cycle times.

Reduced operator fatigue permits the efficiency of Cat power shift Crawler Tractors on many jobs to be estimated at 55 minutes per hour instead of the usual 50 minutes.

Not only is the operator more efficient, but machine efficiency is increased by the exclusive torque divider design of this power shift transmission. This gives all the advantages of torque converter drive while retaining the desirable characteristics of a direct drive machine.

But the only place to prove the advantages of the Cat power shift is on *your* job. There you can compare performance with present rigs—see how much it will do for you.

"HIT THE FLOORBOARD AND LET 'ER ROLL"

That's how to get the most out of Cat wheel Tractor power shift ...how it will best adjust automatically to job conditions.

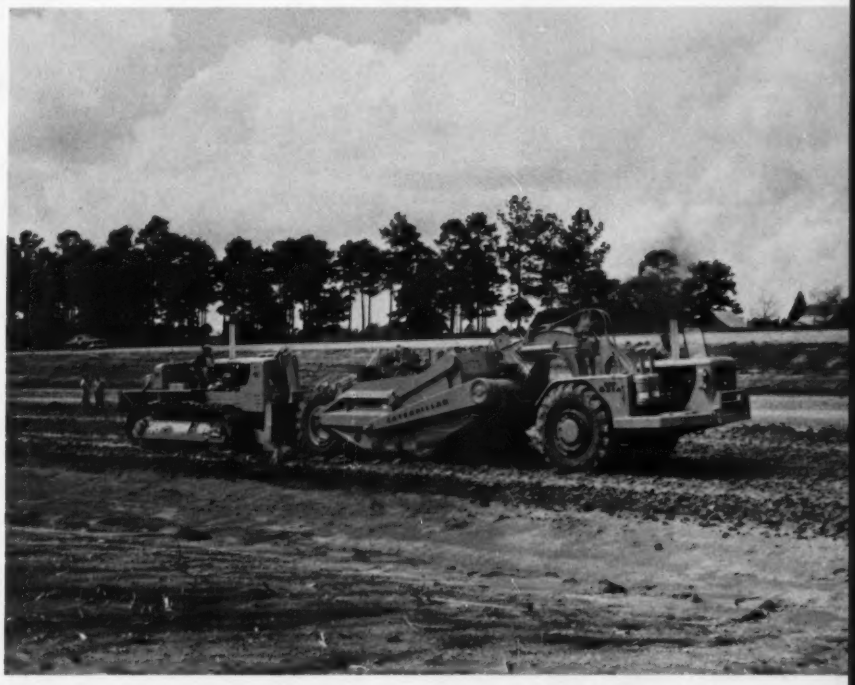
"There's only one way to drive this machine: push it to the limit all the time ... hit the floorboard and let 'er roll. When you keep a heavy foot on the accelerator, that automatic shift does most of the work for you."

Good advice from roadbuilder O. W. Howard of Madisonville, Texas. "At first," he says, "you have to kind of get used to a big rig that's so easy to operate. But it doesn't take long on top of the 631s before you ride 'em for top production."

Cat wheel Tractors *are* easy to operate—you can push them hard in any terrain, under all ground conditions. The shift dial tells you when to shift into one of the three basic speed ranges, and the automatic transmission shifts up (or down) through three types of drive in each range for a total of nine forward speeds—more usable speed than any other rigs on the market. "Our 631s," says Howard, "give us the exact speed for every job condition we encounter practically without effort—no clutching, no hunting for the right gear."

In sticky going on Howard's 2.5-mile section of Interstate 45, his 631s have been sprinting out of the cut with 22-yard average loads of gummy, hard-to-handle Texas dirt. "Power shift does the trick," he says. "That 631 pulls full horsepower out of its diesel whether it's in the cut or barreling along the haul road."

Nothing too complicated about the Cat power shift either. It's a simple mechanical system giving you a torque converter's ability to balance speed and power and the efficiency of direct drive and overdrive. The converter in the exclusive torque divider eliminates engine stalling during loading,



keeps engine speed high. And when you're shifting up it cushions the power train. For high-speed hauling the transmission also provides direct drive and overdrive in each range for fast acceleration and a top road speed of better than 31 MPH on the 631—over 40 MPH on the 630.

THREE-TO-TWO PRODUCTION PAYOFF

Speed like that pays off: Arthur Fleming, 631 operator for Armstrong & Armstrong, Roswell, N. M., highway contractors, says he's been getting three trips for every two by competitive units on Armstrong's 7-mile Interstate 10 spread. In the pit, pulling away from the pusher, he shifts up to 2nd range in 100-150 feet, on to 3rd range in 250 feet on the level in packed sand. He accelerates coming out of the pit, up a 6% grade.

"Automatic shifting is a big help on the fill," says Fleming. "I can watch where I'm going ... makes it easier to spread the material evenly." (State highway specifications call for 4-inch compacted lift.) "The 631 gives me a smooth, stable ride," he continues. "I can stay in my seat at top speeds over ground so rough you have to slow down other machines. The scraper is easy to load ... that new cable control (it's air actuated) helps me to pump in good loads every pass."

Speed ... power ... maneuverability ... stability ... easy operation ... unitized design for servicing ... they're all there in Cat wheel Tractors to give you greater productivity and lower costs. Power shift, providing nine speeds with only three shifts, is standard on the 631 and 630, optional on the 619.

HOW RUGGED IS CAT POWER SHIFT?

Well, after 6100 hours of this...

a factory check showed this...

The Ohio River Collieries Co. liked Caterpillar's offer: namely, to trade them a power shift transmission for the old one in their D9E shown above.

Obviously this sounded good to the Cheshire, Ohio, firm. Their particular D9 had seen 6100 hours of the heaviest kind of duty. They'd worked it 22 hours a day, seven days a week, ripping and 'dozing sandstone, shale and a very hard cherty blue slate.

But it was a good proposition for Caterpillar, too. As part of a continuing program of power shift transmission research and evaluation of field performance, regular spot checks are made of transmissions that have seen rough field service.

How had this one stood up? Measurements showed that wear on all clutch surfaces and gears was slight—dimensions were still within allowable wear, except for the pinion gear, which showed normal spalling after this much use.

For the best in new and used machines, and the best in parts and service—see your Caterpillar Dealer

Caterpillar Tractor Co., General Offices, Peoria, Illinois • Caterpillar Americas Co., Peoria, Illinois • Caterpillar Overseas S.A., Geneva • Caterpillar of Australia Pty. Ltd., Melbourne • Caterpillar Brasil S.A., São Paulo • Caterpillar Tractor Co. Ltd., Glasgow • Caterpillar of Canada Ltd., Toronto

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DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

Form 717-34361-DE128

Printed in U.S.A.

NEW PRODUCT BRIEFS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

INSTRUMENT for determining point of hydraulic system problems is encased in aluminum, 5x6x8-in., weighs 20 lb. When installed hydraulic trouble shows as drop in gpm flow. Then sections of circuit are tested for flow, pressure, and temperature. — Schroeder Bros. Corp.

Circle 348 on Reader Service Card

SAND BLASTER for small-scale removal of dirt, scale, and welding flux from metal parts is operated by one man.—Air Placement Equipment Co.

Circle 349 on Reader Service Card

HEATER has incandescent light built-in for ceiling installation. The 800-w, 120-v unit achieves maximum temperature in 1 min. —Infrared Corp.

Circle 350 on Reader Service Card

GROUND MOISTURE is controlled by Moistop, a polyethylene-coated reinforced paper used to prevent moisture migration through concrete floors. — U. S. Industrial Chemicals Co.

Circle 351 on Reader Service Card

GASOLINE PUMP for fleet operators has 14-ft hose reach, is available with or without ticket printer.—Bennett Pump Div, John Wood Co.

Circle 352 on Reader Service Card

ENGINE STARTING in cold weather for internal combustion engines is made easier by a starting ether in a 16-oz aluminum can.—Pressure Products Co., West Chester, Pa.

Circle 353 on Reader Service Card

COATING for galvanized steel surfaces provides a base for painting that eliminates chipping, peeling, or blistering. Top-Galva is a metallic solution that forms a union with zinc.—Riptrude Corp., Bensenville, Ill.

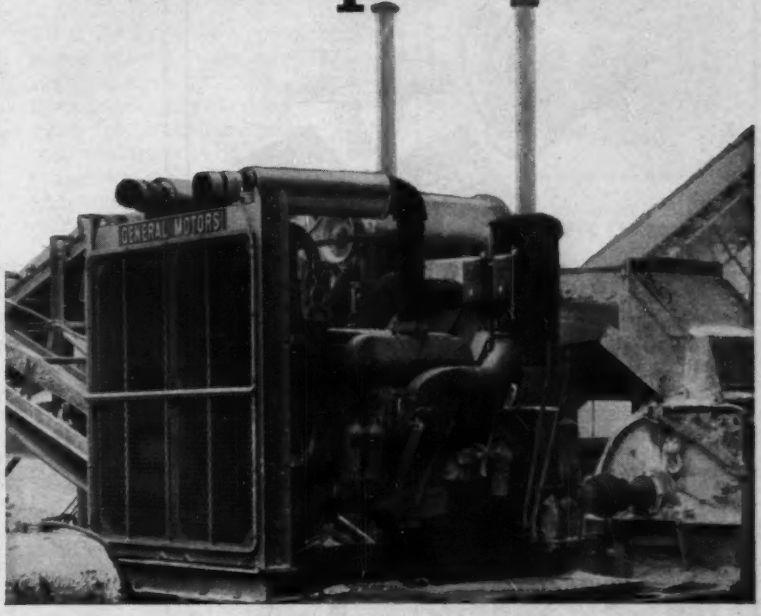
Circle 354 on Reader Service Card

PALLET TRUCKS have a new, loop-type handle for easier operation, are available in 2,200, 3,500 and 4,400-lb capacities—Stokvis Multiton Corp., Port Washington, N. Y.

Circle 355 on Reader Service Card

Crusher dust gets so thick you can't breathe . . . but

Donaclones deliver 99.9% pure air!



Dust gets so thick around this ag limestone plant, it often hides the equipment. Diesel engines on crusher and hammermill used to require frequent overhaul with expensive downtime.

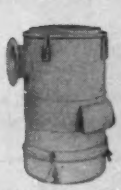
After Donaclones were installed, engines were operated according to the previous overhaul schedule and then examined. *They showed practically no signs of wear.*

The Donaclone's primary centrifugal cleaner removes 98% of the dust. Only 2% remains for the Duralife paper filter giving it an extra-long service life. And it can be renewed when necessary, by dunking in water and detergent.

Add years of engine life by modernizing with Donaclones.

Write for name of dealer

Now factory equipment on many leading makes of engines


Side inlet model

Center tube model

Donaclone by **Donaldson**

666 Pelham Boulevard • St. Paul 14, Minnesota

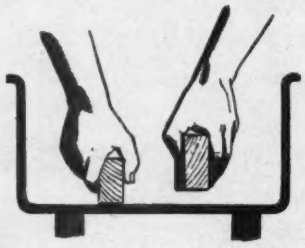
Circle 203 on Reader Service Card

DISTRIBUTOR DAN, the SKF bearing man, says "TO SHRINK A BEARING ONTO A SHAFT GIVE IT A BATH IN HOT OIL"

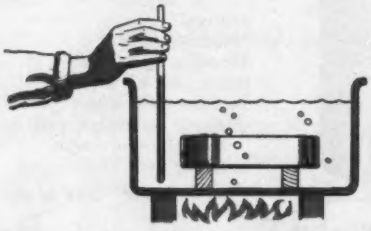
WHY HEAT IT, ANYWAY? If you need an interference fit, it's often convenient to shrink the inner race onto the shaft. To do this, you need to establish a difference in temperature. And it's usually easier to heat and expand the bearing than to cool the shaft.

SOME DO'S AND DON'TS. To heat the bearing, immerse it in hot oil. **Don't** heat the bearing over a flame. And **don't** heat it above 225°F. Plan to use enough oil—either quenching oil that has a minimum flash point of 300°F. or transformer oil.

CLEAN THE CONTAINER FIRST. If you reuse oil, make sure it's absolutely clean by filtering it carefully. Again, use plenty of oil—because too little may heat and cool too rapidly, causing the bearing to heat unevenly.

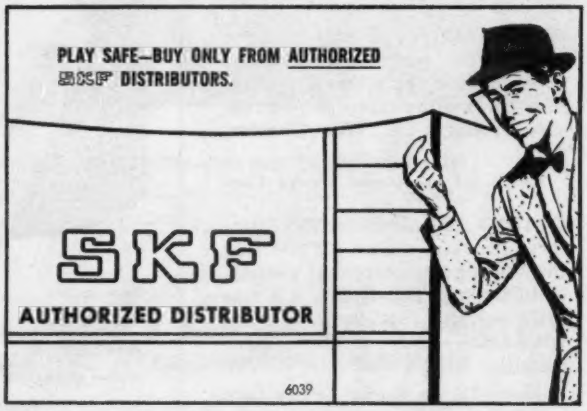


ANOTHER "HOT" TIP. Place a rack at the bottom of the container and set the bearing on it. This will prevent the bearing from touching the hot bottom. It will also separate the bearing from any contamination that may have settled on the bottom.



TO HEAT BEARING UNIFORMLY, place it in the bath as soon as heating starts. Or else allow sufficient time for entire bearing to reach temperature. Stir oil and heat at 200°F. for 15 minutes. Check temperature by immersing a thermometer near bearing.

PLAY SAFE—BUY ONLY FROM AUTHORIZED SKF DISTRIBUTORS.



SKF MOTION ENGINEERING

Advanced ball and roller bearing technology

Circle 204 on Reader Service Card

SHORT CUT TO LONG LINES

Save Work and Speed the Job with NAYLOR Pipe and Wedgelock Couplings

For air, water and ventilating lines, you'll save time and money with this NAYLOR combination.

NAYLOR pipe is light in weight, easy to handle and install. Its lock-seamed, spiralwelded structure assures extra strength and safety.

WEDGELOCK couplings provide a positive connection securely anchored in standard weight grooved ends. Speed the job. A hammer is the only tool required to connect or disconnect them. Available in low-pressure and heavy-duty types.

Write for Bulletin No. 59 on pipe, fittings and couplings.

NAYLOR PIPE Company

General Offices and Plant
1267 East 92nd Street, Chicago 19, Illinois
Eastern U. S. and Foreign Sales Office
60 East 42nd Street, New York 17, N. Y.

Circle 256 on Reader Service Card

New Publications

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy of the items you want, circle the appropriate numbers on the READER SERVICE CARD just inside the back cover.

PIPE LAYING — A 16-p, illustrated manual tells how to lay concrete pressure pipe. Instructions for digging the trench, handling the pipe, lubricating joint rigs, making the joint, checking the gasket, completing the joint, and bedding the pipe are included.—Price Bros. Co., Dayton, Ohio.

Circle 356 on Reader Service Card

TRAILERS — Athey trailers are described in a brochure. The new line of six trailers is intended for use with Caterpillar tractors.—Athey Products Corp., Chicago.

Circle 357 on Reader Service Card

BACKHOES — Parsons-Shawnee backhoes, in four models with 10, 12, 13 and 15-ft deep digging capacities, are the subject of a new bulletin. — Parsons Co., Newton, Ia.

Circle 358 on Reader Service Card

WELDING—A 16-p booklet offers instructions and welding hints for the repair and rebuilding of worn parts.—American Manganese Steel Div., Chicago Heights, Ill.

Circle 359 on Reader Service Card

ROOFS — Two data sheets, one showing insurance premiums savings possible with Vermiculite concrete roofs and the other describing the product, are available.—Vermiculite Institute, Chicago.

Circle 360 on Reader Service Card

VIBRATING SCREENS — Syntron's vibrating screens are described, with specs, in a 32-p illustrated bulletin. —Syntron Co., Homer City, Pa.

Circle 361 on Reader Service Card

PHONE-SPEAKER—A combination telephone and loud speaker that operates on two dry cell batteries is the subject of a bulletin. —Mine Safety Appliance Co., Pittsburgh, Pa.

Circle 362 on Reader Service Card

continued on page 206

"THIS LUBRICANT CUT BEARING REPLACEMENTS OVER 40%"

says—HANOVER BUILDING SUPPLY CO. of Hanover, Pa.

"Before using LUBRIPLATE, we replaced the wheel bearings in over 50% of our trucks each year. Since using it, bearing replacements have dropped to less than 10%. We have also been able to increase periods between chassis lubrications from 500 to 2000 miles. We are very happy over our change to LUBRIPLATE, and heartily recommend it to fleet operators interested in saving money."

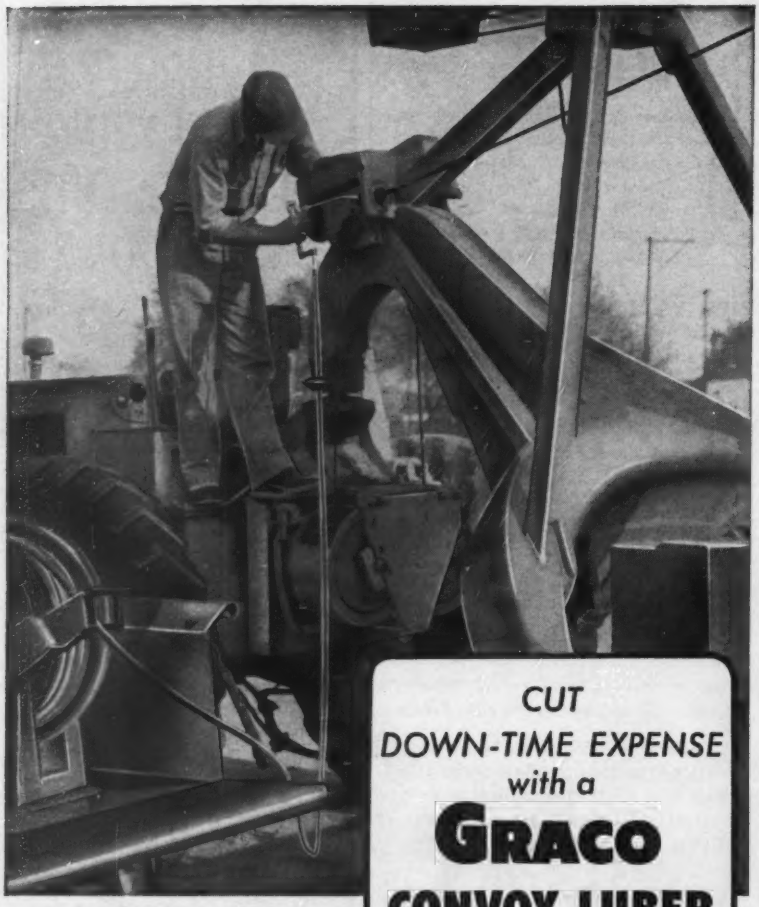
HANOVER BUILDING SUPPLY CO.
C. O. Albright, Pres.

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

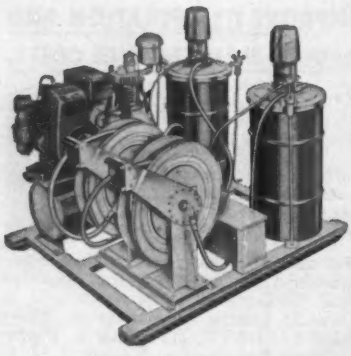
LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

Circle 205 on Reader Service Card



CUT
DOWN-TIME EXPENSE
with a
GRACO
CONVOY LUBER



Every minute you spend maintaining your equipment costs you money! That's why it will pay you to investigate a Graco Convoy Luber.

Designed for on-the-spot lubrication . . . these lubers work to provide fast greasing, oiling and air service *in the field.*

You pump lubricants direct from original shipping drums . . . save equipment transportation time . . . cut costly breakdowns drastically by maintaining around-the-clock lubrication service.

With Graco on the job, preventative maintenance can be fast and systematic . . . and scheduled lubrication of equipment means longer equipment life, less down-time.

Graco Convoy Lubers are available in many sizes and any combination of reels, pumps, compressors, or hoses. See your Graco dealer today for more details on the combination to meet your job requirements.

FREE! Graco Idea Book describes and illustrates typical equipment arrangements, gives specifications, explains how to "job plan" your lube truck. Send for your copy today!

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1046 Graco Square
Minneapolis 13, Minnesota

See Phone Book Yellow Pages "Lubricating Equipment" for Graco Suppliers

Circle 206 on Reader Service Card

NEW PUBLICATIONS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

STEEL FRAMING—Do-it-yourself ideas for framing of storage racks, platforms and other structures with Acme slotted angle framing material are contained in a 24-p booklet.—Acme Steel Co., Chicago

Circle 363 on Reader Service Card

PUMPS—An 8-p bulletin details Aurora's close-coupled end-suction centrifugal pumps, with capacities to 1,600 gpm, heads to 300 ft and temperatures to 250 deg F. —Aurora Pump Div., New York Air Brake Co., Aurora, Ill.

Circle 364 on Reader Service Card

BUCKET TEETH—A bulletin describes Columbia's one-piece bucket tooth, giving dimensions, weight, and metallurgical data.—Columbia Steel Casting Co., Portland, Ore.

Circle 365 on Reader Service Card

ADMINISTRATORS — Highway Officials and Engineers contains names and addresses of 2,000 administrators in fifty states. The directory is $1.00.—American Road Builders Association, Washington, D. C.

Circle 366 on Reader Service Card

SOIL SAMPLING — Giddings Model GS soil sampling machine with a travelling extension bar for exploration to 35 ft, hydraulic power, and interchangeable auger and drill tools in a single head is the subject of a brochure.—Giddings Machine Co., Fort Collins, Colo.

Circle 367 on Reader Service Card

CONCRETE CURING—An Illustrated poster covers the effects of temperature on concrete curing and describes techniques, including water spray, damp burlap, waterproof paper, and membrane curing compounds. — Master Builders Co., Cleveland, Ohio.

Circle 368 on Reader Service Card

BACKHOE — The Ottawa LX backhoe, which is attached or removed from Caterpillar wheel loaders in 30 sec, is the subject of a folder. — Equipment Div., Young Spring & Wire Corp., Bowling Green, Ohio

Circle 369 on Reader Service Card

DRILL CARE — A 32-p. illustrated handbook covers the care and handling of rock drill steels. —Atlas Copco, Inc., Paramus, N.J.

Circle 370 on Reader Service Card

RACKS — Prefabricated storage rack materials are described in a 16-p booklet, How to Win the Race for Storage Space.—Acme Steel Co., Chicago.

Circle 371 on Reader Service Card

SHEAVES — Bulletin 25103 describes Wood's motion-controlled, variable-speed sheaves. — T. B. Wood's Sons Co., Chambersburg, Pa.

Circle 372 on Reader Service Card

POWER TOOLS — A new 96-p catalog covers the complete line of Delta power tools and accessories with specs. — Rockwell Mfg. Co., Pittsburgh, Pa.

Circle 373 on Reader Service Card

CHARTS—Resistance Charts for Acid-Proof Cements is to be used as a guide in selecting cement for corrosion-proof installations. — Acid-Proof Cement Mfg. Assoc. Philadelphia, Pa.

Circle 374 on Reader Service Card

EDGES — Catalog 212-A covers Esco cutting edges, end bits, and router bits, and includes reference tables for major makes of graders, dozers, and scrapers.—Esco Corp., Portland, Ore.

Circle 375 on Reader Service Card

SAFETY — Three safety books deal with daily techniques, workman's compensation claims and safety meetings. For prices write to New Forum Publishing Co., P. O. 2724, Wilmington, Del.

Circle 376 on Reader Service Card

ELECTRIC SET—An illustrated folder describes Allis-Chalmer's 20-35-kw electric set and components. — Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Circle 377 on Reader Service Card

UTILITY VEHICLES — An 8-p catalog illustrates Cushman's electric and gasoline-powered Trucksters for 1962.Cushman Motors, Lincon, Neb.

Circle 378 on Reader Service Card

DRILLS—Clipper core drills, bits and accessories are the subject of a 4-p price catalog.—Clipper Mfg. Co., Kansas City, Mo.

Circle 379 on Reader Service Card

REMOVE SNOW FASTER with MONARCH Power Hydraulic Controls

Don't delay! Now, before winter comes, install a Monarch Power Hydraulic Control on your snow removal equipment. Instant snow plow action—raise, hold or lower—right from the cab with the flick of the wrist. Thousands in use!

A Monarch Control can be quickly installed. See your dealer. Write for illustrated folder.

MONARCH ROAD MACHINERY COMPANY
1363 Michigan St., N.E., Grand Rapids 3, Mich. U.S.A.

Circle 207 on Reader Service Card

CUTTING POWER!

Holes From Floor to Ceiling With One Setup of Longyear "330" Drill!

For more facts on application of Longyear drills and diamond bits, write Department 5B.

A midwest contractor had to make two 6 x 7 foot openings through a 13-inch thick concrete wall. Their air hammer stopped every time it hit reinforcing. Finally they tried a Longyear "330" drill and 6-inch diamond bits. With one setup of the "330" they cut a line of holes from floor to ceiling, ¾-inch reinforcing and all! No scaffolding needed.

Longyear
E. J. LONGYEAR CO.
76 S. Eighth Street, Minneapolis 2, Minnesota
Phone: FEderal 9-7631

Circle 257 on Reader Service Card

"The 21000 diesel made about twice the shovel out of this machine"

. . . reports the operator of a Bucyrus-Erie 54-B shovel owned by Lige Dickson Co., Tacoma, Washington. "It has lots of steady power," the operator adds — "with fast recovery and excellent lugging power."

"It's a good engine," agrees the owner. "It not only increased production, *but dropped fuel consumption 40%!*"

There must be something to it when user after user makes enthusiastic reports like these about Allis-Chalmers "Thousand Series" diesels. Wouldn't it pay you to find out from your dealer what they will do for you? Allis-Chalmers, Milwaukee 1, Wisconsin.

BC-38

ALLIS-CHALMERS

***POWER* FOR A GROWING WORLD**

Circle 208 on Reader Service Card

NEW PUBLICATIONS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

COMPRESSORS—An illustrated bulletin describes Westinghouse and Le Roi air compressors.Le Roi Div., Westinghouse Air Brake Co., Sidney, Ohio

Circle 380 on Reader Service Card

ASBESTOS FIBER—A technical paper reports elimination of jet blast erosion of asphaltic concrete by the addition of asbestos fiber. —Johns-Manville, Manville, N. J.

Circle 381 on Reader Service Card

SHOVEL—A Bulletin has specs on the 254 Trojan tractor shovel with three interchangeable buckets.—Yale & Towne Mfg. Co., Trojan Division, Batavia, N. Y.

Circle 382 on Reader Service Card

ROOF SPANS — Small volume roof truss fabrication is the subject of a 16-p booklet.—Timber Engineering Co., Washington, D.C.

Circle 383 on Reader Service Card

FLOW METER — A solids flow meter is described in a spec sheet. — Bailey Meter Co., Cleveland, Ohio

Circle 384 on Reader Service Card

TORQUE CONVERTER—A 24-p booklet describes Eimco torque converters and includes comparison charts. — Eimco Corp., Salt Lake City, Utah.

Circle 385 on Reader Service Card

TRENCHER — Ware's hydraulic trencher, for use on the Nelson tractor shovel, is described in a bulletin.—Ware Machine Works Inc., Ware, Mass.

Circle 386 on Reader Service Card

CASTELLATED BEAMS—Open-web structural steel beams and their automated manufacture are described in a translation of a German article.—Waller Corp., Crystal Lake, Ill.

Circle 387 on Reader Service Card

CRUSHER — Bulletin 6020 describes a new crusher for reduction of wet and sticky clays or shale without plugging or caking. — Pennsylvania Crusher Div., Bath Iron Works Corp., West Chester, Pa.

Circle 388 on Reader Service Card

"JENNY® MAKES HUNDREDS OF DOLLARS DIFFERENCE" in the resale price of used heavy equipment at the Gil Boers Equipment Co., Chicago. Relying on a Series "3500" Hypressure Jenny

Steam Cleaner for speedy and thorough cleaning of compressors, cranes, scrapers, tractors and other equipment, Assistant Sales Manager Ernest Barthel says, Jenny "is the difference between selling or not . . . means hundreds of dollars difference." The "3500" Jenny delivers up to 250 gph as a steam cleaner and up to 360 gph as a hydraulic cleaner, with pressures up to 300 pounds and temperatures up to 325° F.—right for all heavy cleaning. To find out how Jenny can cut your equipment reconditioning time and speed sales, mail coupon.

hv

HOMESTEAD VALVE MANUFACTURING COMPANY
Hypressure Jenny Division—Coraopolis, Pa.
(In Canada: Hypressure Jenny Sales & Service, Ltd., 517 Jarvis St., Toronto 5, Ontario.)

Please send me full data on the Series "3500" Hypressure Jenny Steam Cleaner 104

Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....

Circle 209 on Reader Service Card

SUPERIOR

The dependable source for ALL concrete forming accessories

Here are representative types of form ties, anchors, inserts, hangers, as well as several new items in Superior's most complete line of concrete accessories. Illustrated is the variety of concrete form work and related jobs in which Superior accessories are used. *All* Superior accessories are designed to provide the most dependable and efficient forming methods.

WHENEVER YOU ARE PLANNING FORM WORK . . . Superior's technical assistance is available to prepare layouts. Call nearest office shown below.

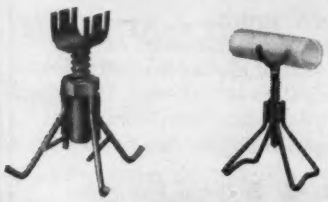
For details request CATALOG 700

SUPERIOR CONCRETE ACCESSORIES, INC.
9301 King Street, Franklin Park, Illinois *(A Suburb of Chicago)*

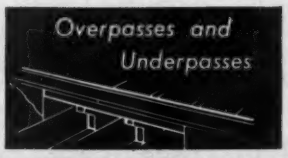
New York Office 39-01 Main St. Flushing 54, N. Y.
Houston Office 4101 San Jacinto Houston 4, Texas
Pacific Coast Plant 2100 Williams St. San Leandro, Calif.

NEW

PRES-STEEL HANGERS
(Patent Pending)



ADJUSTABLE SCREED SUPPORTS

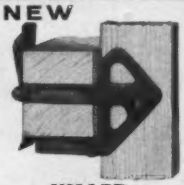


SNAP TIES

NEW

SINGLE LINER TIE HOLDERS

NEW

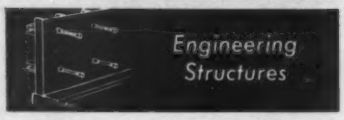


WALER BRACKET

NEW

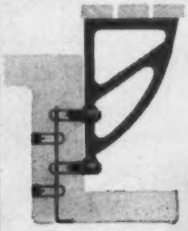
SCAFFOLD BRACKET

TILT-LOCK ASSEMBLY

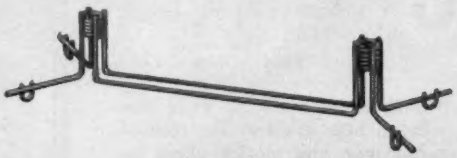


COIL TIES

4-STRUT COIL ROD ANCHORS



RISERFRAMES



PICK-UP INSERTS

Circle 210 on Reader Service Card

Advertisers' Literature

Listed below is free material offered in this issue's advertisements received up to Sept. 15. To get the items you want, circle appropriate numbers on the SERVICE CARD inside the back cover.

FORMS—The entire line of Form-Crete steel forms is described in Catalog 400.—Form-Crete Dept., FMC Corp.

Circle 389 on Reader Service Card

STEEL JOISTS — Standard Specifications and Load Tables is a 52-p. reference table for steel joists.—Steel Joist Institute.

Circle 390 on Reader Service Card

STEEL PRODUCTS—The uses of CF & I steel products and technical assistance are covered in Catalog G-104.—Colorado Fuel and Iron.

Circle 391 on Reader Service Card

BRIDGES—The line of Richmond products for concrete bridge building is described in a new handbook.—Richmond Screw & Anchor Co.

Circle 392 on Reader Service Card

POSEY

IROQUOIS ASPHALT PLANTS

Complete batch type Asphalt plants with capacities from 50 to 240 tons per hour — hot-cold mix. New automated design enables complete plant to be operated by one man.

For FREE 22-page illustrated catalog, write:

Custom Fabrication For Over 50 Years

DIVISIONS:
• Iroquois Asphalt Plants • Mixers and Blenders
• Tunnel Forms • Industrial Heating • Foundry
• Large OD Steel pipe

108 SOUTH STREET LANCASTER, PA.

Circle 251 on Reader Service Card

WELDER — The Lowboy welder, available in 300 to 400-amp models, is described in data sheet A-133-E.—Hobart Brothers Co.

Circle 393 on Reader Service Card

WINCH—A pipe driving winch for soil sampling operations is the subject of Bulletin 300.—Sprague & Henwood, Inc.

Circle 394 on Reader Service Card

BEARINGS — A complete line of radial and thrust cylindrical roller bearings is described in a catalog.—Rollway Bearing Co.

Circle 395 on Reader Service Card

DELAY DEVICE — Primacord connectors, with 5, 9, or 17-millisecond delay periods, are described.—Ensign-Bickford Co.

Circle 396 on Reader Service Card

WIRE ROPE—A booklet details the features of Roebling's Royal Blue wire rope. — John A. Roebling Sons Div.

Circle 397 on Reader Service Card

STEEL BUILDINGS—A line of steel buildings that can be dismantled for re-use is described in a bulletin.—Armco Drainage & Metal.

Circle 398 on Reader Service Card

DREDGES — The Dragon Dredge line, with electro-hydraulic controls, is described in Bulletin 980. —Ellicott Machine Corp.

Circle 399 on Reader Service Card

SHORING—Shoring, scaffolds, and engineering service for various jobs are covered in Bulletin PSS-51.—Patent Scaffolding Co.

Circle 400 on Reader Service Card

STEAM CLEANER—The Series 3500 Jenny steam cleaner for heavy equipment is the subject of literature.—Homestead Valve.

Circle 401 on Reader Service Card

FORMING ACCESSORIES — Form ties, anchors, inserts, hangers, and other forming accessories are listed in Catalog 700.—Superior.

Circle 402 on Reader Service Card

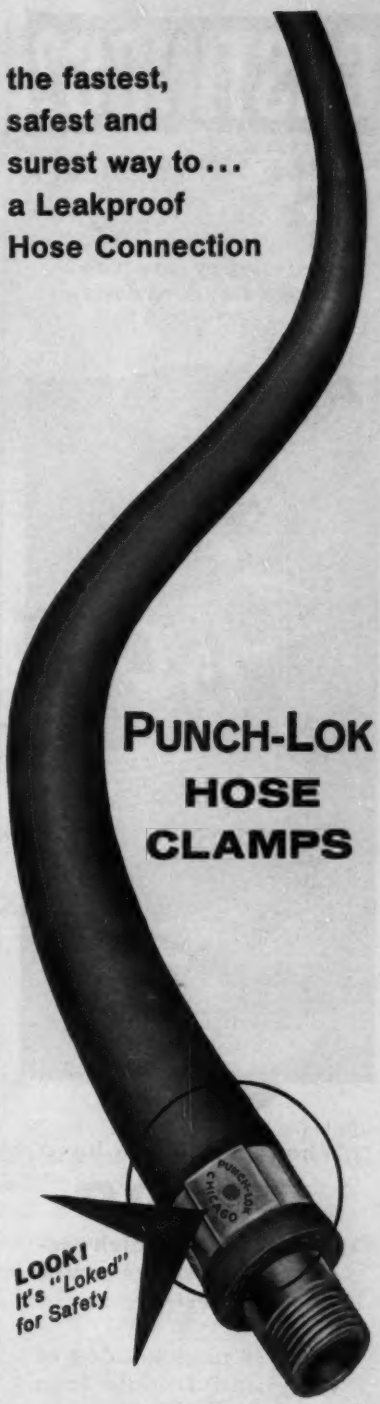
CASTINGS—Thousands of castings and patterns for construction are listed in a 168-p. catalog.—Neenah Foundry Co.

Circle 403 on Reader Service Card

PIPE — Naylor pipe featuring spiralwelded structure is described with fittings and couplings in Bulletin 59.—Naylor Pipe Co.

Circle 404 on Reader Service Card

the fastest, safest and surest way to... a Leakproof Hose Connection



PUNCH-LOK HOSE CLAMPS

See Your Distributor or write direct for catalog and prices

The Sign of a GOOD Hose Clamp

PUNCH-LOK Company

Dept. F, 321 Justine St., Chicago 7, Ill.

Circle 211 on Reader Service Card

CASTINGS?

That's all we make!

And on hand for immediate delivery are thousands of standard designs such as –

What's more, we have

15,000

patterns from which construction castings can be produced fast.

Our 168 page catalog of Gray and Ductile Iron castings will be sent promptly upon request.

NF

NEENAH FOUNDRY COMPANY

NEENAH • WISCONSIN

Chicago office: 5445 N. Neva Ave., Chicago 31

Circle 212 on Reader Service Card

AD LITERATURE...

Listed below is free material offered in this issue's advertisements received up to Sept. 15. To get the items you want, circle appropriate numbers on the SERVICE CARD inside the back cover.

COMPACTION — Barco Rammers are described in Catalog 621. Soil Compaction Cost Data is also available.—Barco Mfg. Co.

Circle 405 on Reader Service Card

LUBRICATION — Greasing, oiling, and air service in the field with Graco's convoy luber is described in a booklet.—Gray Co., Inc.

Circle 406 on Reader Service Card

SHORING — Heavy-duty shoring that carries up to 20,000 lb per frame is the subject of Bulletin 1110-A. — Safeway Steel Products, Inc.

Circle 407 on Reader Service Card

CONCRETE FORMING—Accessories for concrete forming in a complete line are the subject of a catalog. — Dayton Sure-Grip & Shore Co.

Circle 408 on Reader Service Card

TRAILERS — A complete line of platform trailers for distributed or concentrated loads is covered in folders.—Trailmobile, Inc.

Circle 409 on Reader Service Card

TIRES—Steel cord tires for off-the-road use are the subject of a booklet. — Bekaert Steel Wire Corp.

Circle 410 on Reader Service Card

ASPHALT PLANTS—Asphalt plants with capacities from 50 to 240 tons per hr, run by one man, are described in a catalog. — Posey Iron Works.

Circle 411 on Reader Service Card

HOSE CLAMPS—Hose clamps that lock for safety and eliminate leakage are described with prices in a catalog.—Punch-Lok Co.

Circle 412 on Reader Service Card

LOADER — Specifications on Eimco's 126 front-end loader are available along with bulletin LM-1126.—The Eimco Corp.

Circle 413 on Reader Service Card

LUBRICATION — Lubriplate Data Book describes Lubriplate grease and fluid lubricants.—Lubriplate Div., Fiske Bros. Refining Co.

Circle 414 on Reader Service Card

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT • BUSINESS EQUIPMENT — USED OR RESALE OPPORTUNITIES

DISPLAYED RATE

EQUIPMENT & BUSINESS OPPORTUNITY advertising $21.75 per inch.

EMPLOYMENT OPPORTUNITIES—$37.00 per inch. Subject to Agency Commission.

UNDISPLAYED RATE

(Not available for equipment advertising) $2.10 a line, minimum 3 lines.

Positions wanted undisplayed rate is ½ of above rate payable in advance.

POSITION VACANT

Wanted—Estimating Engineer with experience as construction superintendent familiar all phases high rise re-enforced concrete buildings for sales position with prominent manufacturer of construction machinery. Address P-7434, Construction Methods & Equipment, Classified Adv. Div., 645 N. Michigan Ave., Chic. 11, Ill.

Denver, Colorado

Wholesale Building Materials Corporation

FOR SALE

Physical facilities are excellent—30,000 sq. ft. dock-high with rail, six blocks from major traffic interchange. Owner will sell corporation, and sell or lease real estate. This corporation has a $250,000 tax loss.

VAN SCHAACK & COMPANY

624—17th Street, Denver 2, Colorado

Circle 258 on Reader Service Card

FOR SALE

2 MANITOWOC 4500 shovels S/N 4630 & 4637 equipped with 50' booms, & 37' sticks & 5 cu. yd. buckets
2 LORAIN L85 shovels S/N 0001 & 0002 equipped with 26' booms & 24' sticks
2 KOEHRING 304 shovels with 1 cu.yd. buckets S/N C7503 & C7504
1 BUCYRUS ERIE 38-B shovel S/N93773
2 ROBBINS vertical rotary drills equipped to drill 9" plus holes, mounted on int. TD-24 tractors with Gardner Denver air compressors
2 CATERPILLAR D-8 bulldozers 14A1940 & 1988
2 EUCLID TC-12 tractors equipped as pushers, one may be equipped as bulldozer S/N 19274 & 23268
1 HUBER-WARCO grader 5-D-190 S/N 5D-187247
1 JOY 5CM miner
1 JEFFREY 76 AM Colmol
1 90 ton portable coal bin,
1 1,000 ft. of 30" extensible belt with drive
1 36" extensible belt drive

PART AT A GREAT SAVINGS,

OVER $200,000.00 WORTH

EUCLID parts for S-18, 36TD, 14TDT, 46TD, 24TDT, TC12, 27FD
CATERPILLAR parts for D-8 2U series & D-9
MANITOWOC 3506 parts
BUCYRUS ERIE parts for 38-B, 51-B, 54-B
M-R-S 190 parts
ROBBINS DRILL parts

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ERNEST W. BRUNS

305 Reseveir Rd., Beckley, West Virginia

Ph. CL 26226

Circle 259 on Reader Service Card

NYLON TRUCK TIRES

GUARANTEED

BEST PRICES & QUALITY

Write For Complete Price List

HARMO TIRE & RUBBER CO.

1800 W. Fort TAshmoo 8-7344 Detroit 16, Mich.

Circle 260 on Reader Service Card

BUY SELL RENT

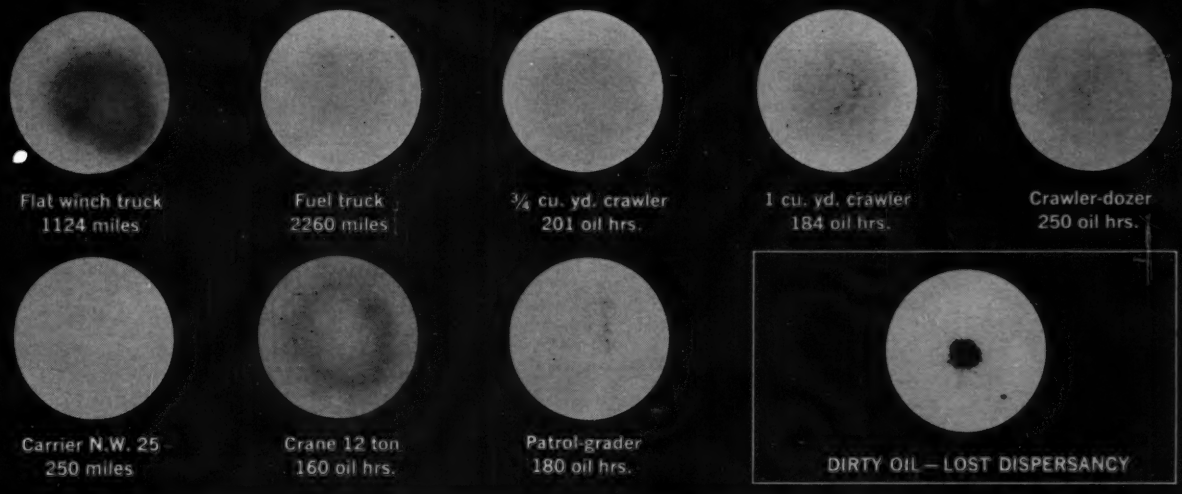
USED STEEL

Beams—Pipe & Casing—Plate—BP's—RR Trestles—Bridges

LEOPOLD COHEN IRON CO.

3000 S. Kedzie Chicago 23, Ill. Bi 7-6336

Circle 261 on Reader Service Card



The Oilprints above were taken from nine different engines. The first eight oil samples are from engines using Shell Rotella T Oil 20W/40. Compare their cleanliness with the sample in the box. The oil sample in the box is heavily contaminated, a potential source of trouble.

EVIDENCE:

"These Oilprints show how Shell Rotella T Oil 20W/40 helped us solve a major overhaul problem in a climate that ranges from sub-zero to sizzling hot."

—says successful Michigan excavation contractor.

A Michigan contractor* switched his entire fleet to Rotella® T Oil 20W/40—80 vehicles, 8 different types of equipment.

He now reports longer engine life due to reduced piston ring wear, reduced valve train problems and easier starting.

Read about his experience with Rotella T Oil 20W/40 and the Shell ADC® Oilprint Analysis.

"STICKING valves were causing premature engine failure," reports this contractor. "Then we tried Shell's Rotella T Oil 20W/40.

"Since then, valve train failures have been drastically reduced. Engines last longer.

"Starting is no problem now, even when the weather is well below freezing.

"Our entire fleet is now on Shell Rotella T Oil 20W/40. Cranes, bulldozers, pickups, cars—everything.

"Periodic checks with Shell's ADC® Oilprint Analysis show that we get improved oil performance with this Shell oil. And the Oilprints help us spot many troubles before they can become serious.

"For example, an internal coolant leak often will show up on an Oilprint before there are any other symptoms. What's even more important, Shell ADC Oilprints have helped establish the proper oil drain schedule for each engine."

Four key ways that Shell Rotella T 20W/40 can help cut costs

1 It can increase fuel mileage by reducing engine friction in cold weather.
2 It reduces motor oil inventory to a single, multi-purpose, all-season oil.
3 It can help reduce engine wear rates and extend overhaul intervals.
4 It lengthens battery life because engines start easier on cold mornings.

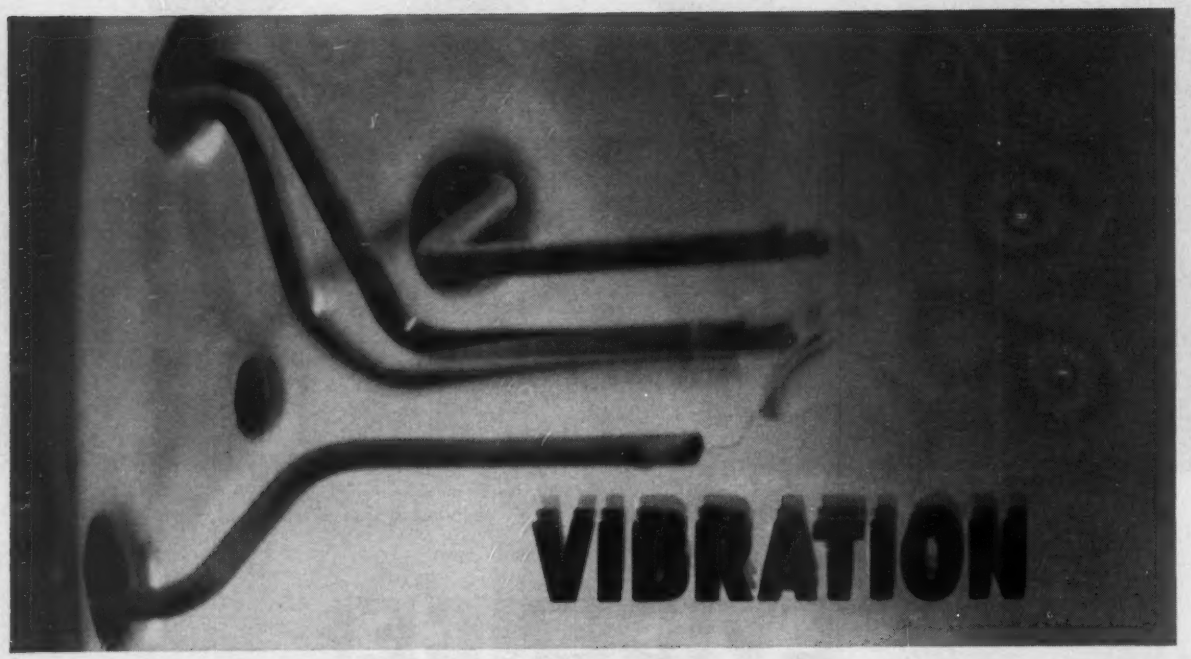
See your Shell Representative for full details about Rotella T Oil 20W/40 and the Shell ADC Oilprint Analysis. And ask him about Shell Rimula® Oil. It's recommended for all equipment requiring Series 3 oil.

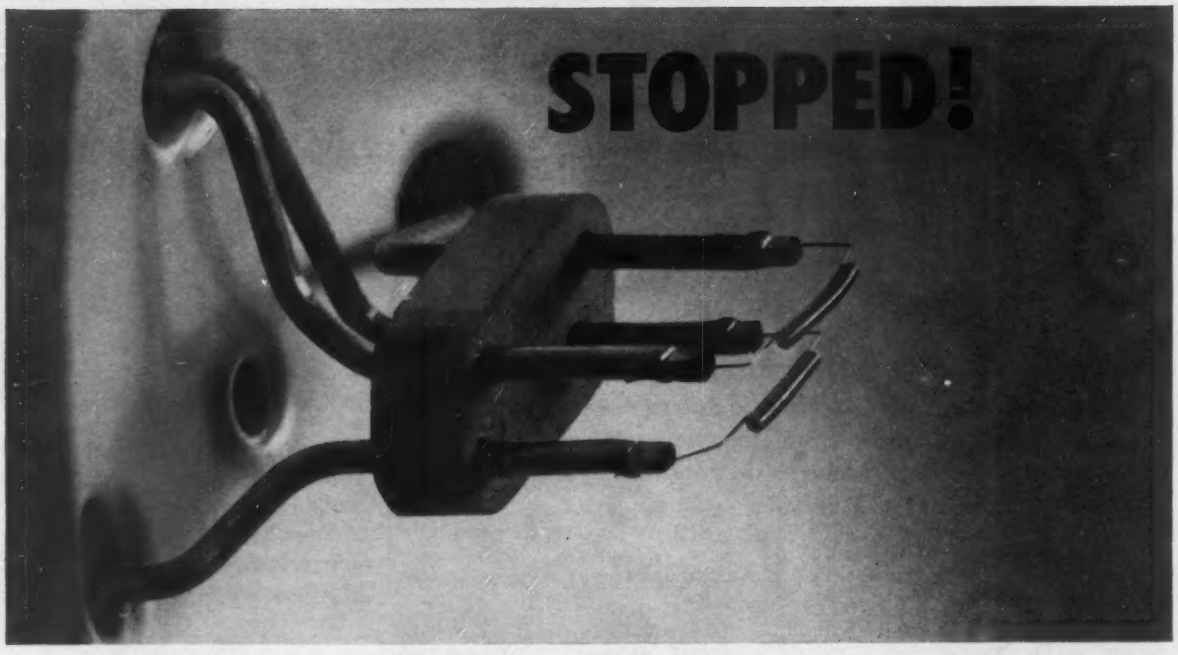
SHELL

A Bulletin from Shell
—where 1997 scientists are working to provide better products for industry

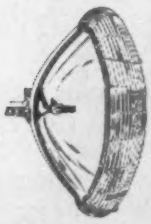
*Name on request

Circle 213 on Reader Service Card





Unretouched photographs—both lamps are being vibrated hundreds of times per second.



The ceramic shock absorber in new General Electric heavy duty construction lamps practically stops all vibration before it gets to the lamp filament. That means General Electric construction equipment lamps last much longer than ordinary lamps that don't have ceramic shock absorbers (top photo). Why not try them the next time you replace lamps. Many construction machinery manufacturers specify them. And they cost no more than any other lamps.

Ask your lamp supplier for the new G-E construction machinery lamps with the ceramic shock absorber. These are the headlamps: #4480 (12 volt) and #4880 (24 volt) and floodlamps: #4478 (12 volt) and #4578 (24 volt). General Electric Co., Miniature Lamp Dept. M-147, Nela Park, Cleveland 12, Ohio.

Progress Is Our Most Important Product

GENERAL ELECTRIC

Circle 214 on Reader Service Card

Contractors Try Water Filters

CONTRACTORS ARE LEARNING that it takes more than a quick look at a temperature gage to check cooling system efficiency.

A temperature gage may not show a rise in coolant temperature until serious damage has occurred to the engine. Scored cylinders, warped cylinder heads, cracked blocks and other damage often results from undetected failure of the cooling system.

Most cooling system failures are caused by dirt, sludge, rust, and scale that build up and block coolant from critical areas. Air in the coolant creates hot spots that can cause cavitation of engine metal. Electrolytic corrosion also weakens and pits engine metal. All these factors reduce cooling efficiency at critical heat transfer areas adjacent to heads, valves and cylinder walls.

To control these factors, more and more contractors are turning to cooling system filters. Ohio contractor C. F. Replogle Co. installs them in all major equipment. So does Morrison-Knudsen Co., Inc., of Boise, Idaho. To check for air in cooling systems, many contractors also install sight glasses.

Both Replogle and M-K use cooling system conditioners manufactured by the Perry Filter Div. of R. M. Hollingshead Corp. The Perry filter is a by-pass unit, much like an oil filter. It contains a replaceable filter element. The filter provides five-way action: mechanical filtration, pH control, water softening, rust inhibition and electrolytic control.

The filter has the same basic water circuit as an automobile heater. Water flows into the filter through an inlet hose connected to a point in the cooling system where coolant pressure is high. An outlet hose at the top of the filter is connected to a low pressure point.

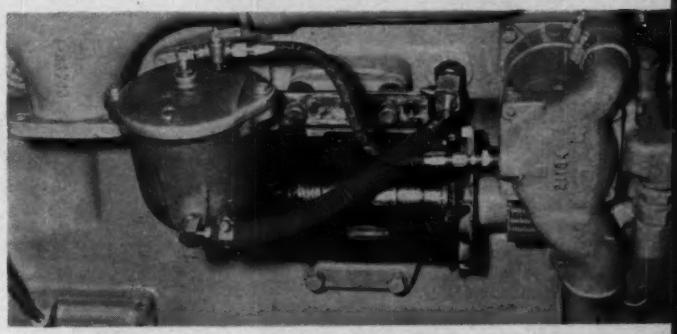
Installation is simple for an experienced mechanic. Morrison-Knudsen reports that it takes about two man hours to install a filter on most types of equipment. M-K uses filters on all trucks, excavating equipment, and stationary diesels.

M-K prefers engine mountings whenever possible, but filters can also be installed on the frame or firewall. The filter must be below the top of the radiator. It should be easily accessible for servicing and in a vertical or near vertical position. Before installation, paint or grease at the point of contact must be removed to provide a ground.

Connections for the inlet and outlet hoses can be made from existing openings (such as a water header opening, cylinder head opening, or thermostat housing) in the engine head or block. Heavy-duty heater hose with a minimum inside diameter of at least 5/8-in. is best.

The inlet hose should not exceed 18 in. in length, but the outlet hose can be as long as necessary. For convenience in servicing, Morrison-Knudsen installs shut-off valves on the inlet and outlet lines. These are put on the engine end of the lines.

SERVICING—Mechanic changes filter cartridge on truck after 10,000 mi. He also will buff resistor plate with wire brush to prevent corrosion, clean filter sump, and replace cover gasket.



INSTALLATION—Contractors prefer engine mounting, but frame can also carry unit. Inlet and outlet hoses can be connected to existing engine openings. Installation takes mechanic 2 hr.

Servicing is simple, too. Replogle services filters on Caterpillar, LeTourneau-Westinghouse, M-R-S and similar machines every 300 to 500 hr. On their Autocar trucks, the service interval ranges between 5,000 and 10,000 mi.

At service intervals, mechanics install a new cover gasket as well as a new replacement cartridge. They also clean the filter sump and buff the lower resistor plate with a wire brush or wheel. This plate is replaced when it wears thin or develops large jagged holes.

Replogle installs sight glasses of their own make when they equip a machine with a filter. The sight glasses are pieces of transparent tubing installed in the inlet hose. When air bubbles are detected in the sight glass, a serviceman adds water to fill the system. If air bubbles persist, the cooling system is checked thoroughly for leaks.

Perry also manufacturers a flow condition indicator to check the color and condition of coolant. This is a heavy walled pyrex glass tube installed in the filter inlet line. It enables a mechanic to check for air bubbles as well as color. When the coolant loses its characteristic rich golden yellow color, immediate servicing is indicated.

galvanized beam guard rail

CUTS MAINTENANCE COSTS TO THE BONE

CUTS PAINTING COSTS

• While the cost for erecting is comparable to that of painted rail, the final installed cost is often *less*, due to the elimination of the painting crew.

• Galvanized rail virtually does away with maintenance, saving the high cost of periodic repaintings.

• Should it be desirable to restore reflectivity after a few years, only the exposed outer surface need be painted. The inner surfaces are still protected by the galvanizing. This greatly reduces the painting costs.

GALVANIZING ASSURES PROTECTION

• The electrochemical action of the zinc coating assures continuing protection even if part of the rail is exposed by damage.

STEEL IS STRONG AND DURABLE

• Galvanized rail will last as long as any competitive material, at lower cost, and at no sacrifice in strength.

For full details, call our nearest district sales office.

Galvanized Steel

for Strength
... Economy
... Versatility

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BETHLEHEM STEEL

BETHLEHEM STEEL

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Construction Methods AND EQUIPMENT

330 WEST 42nd STREET, NEW YORK 36 — McGRAW-HILL — LOngacre 4-3000

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Methods Memo...

R. G. Gets an Award

R. G. LeTourneau poses with a collection of the giant rigs that have earned him fame as an equipment designer. All the machines in the picture are powered by electric wheels, which he pioneered.

Last month in Milwaukee, the Society of Automotive Engineers honored Mr. LeTourneau with the Elmer A. Sperry Award for advancing the art of transportation. It was one of three awards the earthmoving pioneer has won this year in recognition of his talents for engineering and design.

Roadbuilders Star in Photo Show

New York City's Museum of Modern Art this summer displayed an exhibition of photos called "Roads". Assembled under a grant from the CBS Foundation, the show now is available to anybody with a place to hang it.

Presenting the work of roadbuilders through the ages, the exhibition is an imaginative display that runs the gamut from the Appian Way to a four-level interchange in Texas. Modern ariport runways are included in the show, as well as the ancient runway atop the Great Wall of China.

The exhibit consists of 70 enlarged photographs. It was assembled by architect-engineer Bernard Rudofsky of MIT and Arthur Drexler, director of the museum's department of architecture.

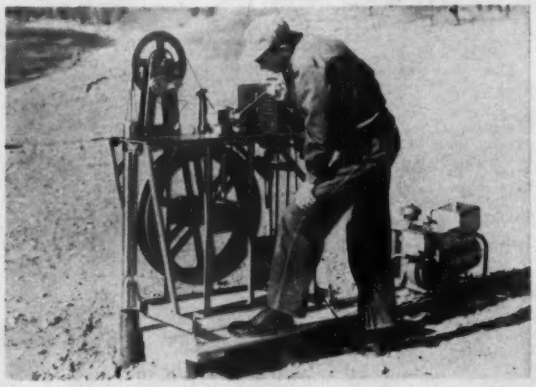
Look, Ma—No Hands!

The day when contractors will control earthmoving equipment by remote control is a step closer. The Euclid Div. of General Motors is exploring the possibility of installing an electronically controlled haul road at the site of an iron mine in the Mesabi range.

In 1958, GM engineers built a test section of automatic highway at their Michigan proving grounds. A cable buried in the middle of each lane guides driverless vehicles equipped with instruments to pick up signals from the cable.

At the Mesabi mine, engineers are planning to equip ore carriers with electronic devices that will permit remote control of the big rigs over a 1½ to 2-mi stretch of rough haul road. The system will include automatic loading and unloading of the ore carriers.

At GM, the feeling is strong that the system will work for this type of application. The big question, of course, is price. The initial price tag will be high, but the operating economies effected by remote control operation may more than offset installation costs.



Camera Probes Earth's Crust

A special camera that makes a complete photographic record of a 3-in. bore hole may eliminate costly core drilling in the future. It cost Republic Engineering and Manufacturing Co. of St. Paul about $80,000 to develop the camera for the Corps of Engineers, but its successful use at two dam sites already has justified the expense.

The camera is housed in a 2¾-in.-dia, 34-in.-long stainless steel cylinder. A winch-powered cable attached to one end of the cylinder lowers it into the bore hole. A transparent quartz window encircles the cylinder near its lower end. Inside the window, a conical mirror directs an image of the bore hole wall upward into the camera lens.

A hole through the axis of the mirror enables the camera to record, in the center of each circular picture, an image of a compass and inclinometer located below the mirror. A flashing strobe light exposes the 8-mm indoor movie film one frame at a time as each frame moves into position behind the lens. Both the film drive mechanism and the strobe light are synchronized with the winch mechanism at the surface so that 1-in. sections of bore hole are photographed at ¾-sec. intervals as the camera is raised in the hole. Every inch of a 75-ft-deep bore hole can be recorded on one film.

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